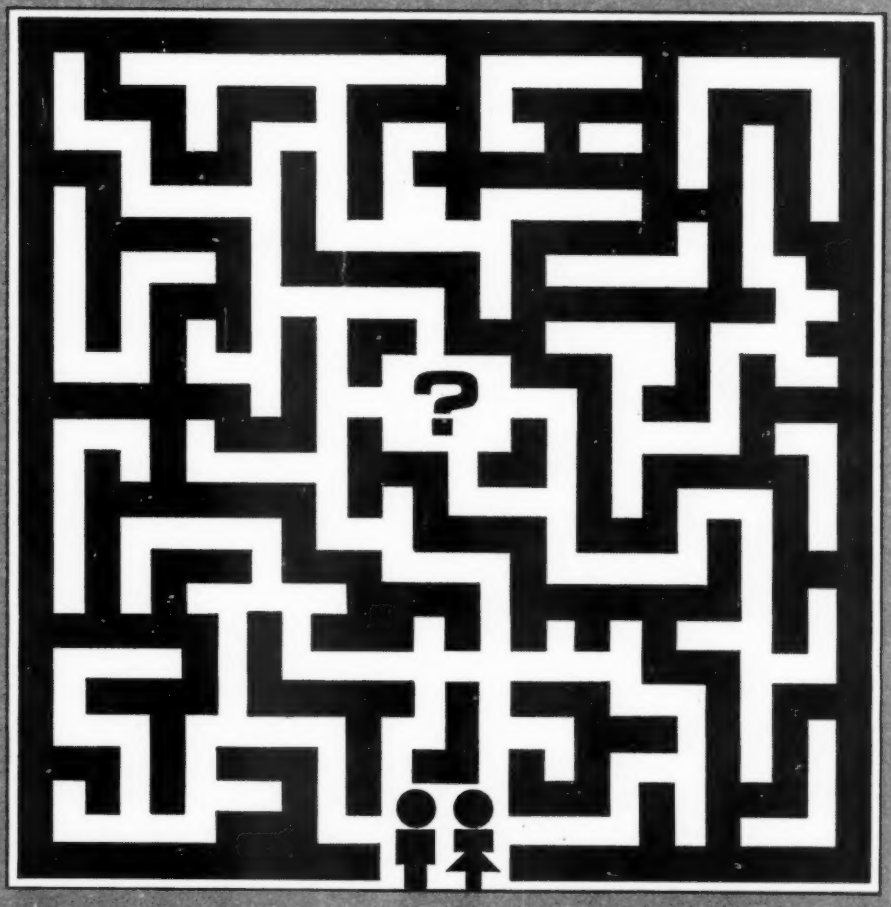
Trends in Education



1976/2

June 1976

EDUCATION 16 - 19

Genetics

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Statistics

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Department of Education and Science

HMSO 35p net

Annual subscription
£1.76 including postage

Trends in Education

JUNE 1976

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The opinions expressed in Trends in Education are those of the writers and do not necessarily reflect the views of the Department of Education and Science. Contributions (2,000 words maximum) should be addressed to the Executive Editor.

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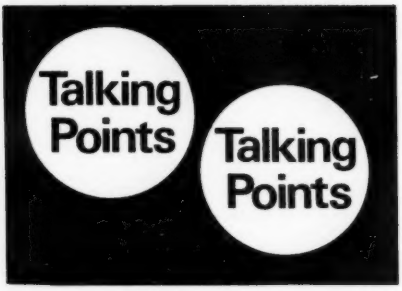


When will they ever learn?

A great deal of anxiety has been expressed in educational weeklies and quarterlies over the past months about the effect on our national future of the shortage of expert teachers of mathematics and science in our secondary schools, but there seems to be no consensus on either the causes or the cure. Perhaps if we were more certain about the relative weighting of the causes suggested we could offer precise remedies. Here are some of the accusations and counter-accusations commonly made:

- 'Society nowadays exhibits a new lack of emphasis on skills in general . . . The attitude is "let's get by without acquiring any particular hard skills" ' (Professor Armitage, 1974).
- Parents (and society) are sex-typing children from birth and confirming that girls are not expected to be good at mathematics or science. Hence the available talent is almost halved.
- Many primary teachers do not know enough mathematics or science to see opportunities which arise in the classroom to stimulate fundamental interest in these subjects. Similar complaints are made about some non-specialist secondary teachers of mathematics: 'What was not appreciated . . . was that many of the most highly skilled, qualified and dedicated teachers had only basic knowledge of, and little interest in, mathematics' (a quotation from an article by the former head of a mathematics department, published in *Skill*, Summer 1974).
- Some primary teachers neglect basic computational skills, thus making the later stages of both mathematics and science unnecessarily difficult for their pupils. One teacher, quoted in *Skill*, Spring 1974, said: 'When I am teaching fractions or decimals I get so bored with the subject that I switch to more satisfying maths because I enjoy it'. And Mrs Rees, senior research fellow at Brunel, said: 'It cannot be denied that there has been a swing away from numeracy both at primary and at secondary school levels . . . The disappearance of the word "arithmetic" possibly has made it easier to neglect the positive teaching of number concepts and operations'.
- Some primary teachers, on the other hand, practise computational drills so relentlessly that they create firm anti-mathematical attitudes: 'A large proportion of the children have by now transformed their indifference into actual dislike (ranging from mild to severe). They have had four years of "sums" and they want to be rid of them' (head of a mathematics department, *Skill*, Summer 1974).
- Illness and truancy undermine the learning of a linear subject far more than that of an expressive one. Hence those who miss mathematics and science lessons begin to develop a flight from the apparently incomprehensible.
- At secondary level the gradual phasing out of single-sex schools has led to a further diminution in the number of girls specializing in science or mathematics because it isn't the approved role

for women; and these subjects are often taught by men who do not understand that girls have to be encouraged and need illustrations chosen from their own interests.

- The introduction of mixed ability grouping in the early stages of some secondary schools has led to far too much individual work card activity (ILEA report, 1975), precluding useful peer group discussions and making it difficult even for the teacher to choose the appropriate moment for class discussions which will sort out the difficulties encountered.
- The first and second year programme of some secondary schools has successfully integrated a good deal of mathematics and science out of the curriculum. When these subjects reappear in their normal guises at a later stage, their demands seem too daunting to many pupils.
- In many schools mathematics and science are still taught as 'right answer' subjects, thus appealing only to convergent thinkers.
- Colleges of education give intending primary teachers far too little time for mathematics and science in relation to the time that will be assigned to these subjects in the school curriculum.
- Universities and the CNAA demand from colleges of education far too high a standard of performance in theory of education and in the main subject.
- The Department of Education and Science is halving teacher training places: there will therefore be fewer teachers of secondary science and mathematics, and many more primary teachers will be educated in institutions where there is no strong department of mathematics or science, only some curriculum work taught by lecturers who don't mind doing without advanced work.
- University mathematicians and scientists are put off teaching as a profession by press and union reports of indiscipline, violence and lack of respect for authority in schools.

Are any of these accusations justified? If so, what can be done— by parents, schools, colleges, universities, the Department, the press, or whoever else may be appropriate — to improve the situation?

Education 16 - 19

Getting ready for work

Articles in this issue of TRENDS discuss various aspects of the problems created by the transition from 'learning to earning'. In the spring the Department of Education and Science organized a conference in London on this subject and provided three background papers* as a basis for discussion. The papers dealt with:

a unified approach to vocational preparation;
appropriate teaching and learning methods;
the contribution of schools to preparation for working life.

The following paragraphs briefly summarize the first paper.

A unified approach to educational preparation

The nature of the problem

About 740,000 young people leave school in Great Britain each year, more than half of them at the minimum school leaving age of 16. Some 600,000 enter the labour market direct, and half of these receive no further education and very little training. A high proportion are girls, who are less likely to enter occupations offering traditional apprenticeships, or to be released by their employers for part-time education.

This neglect of 40 per cent of all school leavers contrasts with the substantial resources devoted to the training and further education of the other 60 per cent. Most young people do manage to find jobs and become adapted to the demands of working life, but inadequate preparation for employment makes the transition more difficult and haphazard and imposes unnecessary limitations. It restricts the young entrant's immediate satisfaction in his job and his future development; and it lessens his value to the enterprise of which he is part. Failure to invest in human capital at this crucial stage of transition has far-reaching social and economic consequences. It is a waste of human resources which society can ill afford.

Pointers to progress

There are already in this country well-developed education and training arrangements, responsive to demand and flexible in operation. Why are so many young people unwilling or unable to use them? The essential problem is that their real needs escape identification. They do not see the point of continuing their studies, and their employers undervalue the importance of proper preparation to performance on the job.

* Copies of the three papers and a transcript of the Conference proceedings are available from the DES.

Many of the young people who leave school at the earliest opportunity have little enthusiasm for continued studies, especially of a kind which they associate with schooling. Though a college of further education offers a new environment for learning, by some it will still be seen as an extension of school. Other young people who are not hostile to continued study or training may still not receive it if their employers are not convinced of its importance.

A unified approach can, and should, accommodate a wide variety of flexible arrangements. What has so far been achieved in the development of successful integrated courses reflects the recognition that training and education should not be sharply distinguished: they are intimately related aspects of a single process of learning designed both to prepare for employment and assist broader personal development. There is a growing recognition that training for jobs at all levels needs to be supplemented by a wider education, albeit with a practical flavour, to provide the groundwork for life-long learning. Insistence on the distinction between education and training stands in the way of the flexibility required in a changing society where periodic retraining for new jobs is likely to become a normal feature of working life.

A united approach to vocational preparation, involving the joint planning and provision of training and further education, is not, however, an easy option. It requires an equal partnership of trainers and educators at all levels, with joint planning and development of curricula, teaching methods and materials.

The broad aim of vocational preparation courses is to make young people better fitted for employment, and for the other demands of adult life. This suggests the following objectives:

i. to develop the basic skills which will be needed in adult life generally, and at work in particular;
ii. to strengthen the foundation of skill and knowledge on which further training and education can be built;
iii. to increase the young person's understanding of his society and how it works;
iv. to increase the young person's understanding of himself and his potential.

Although the concept of unified vocational preparation has developed from a variety of experimental approaches, the unification of education and training represents a new departure, requiring the development of new currciula, new teaching methods, and the creation of a new relationship between the education and training services. Initial progress needs to be carefully planned, controlled and evaluated at every stage.

A possible programme, lasting for up to five years, could be made up of a number of carefully designed and evaluated pilot schemes to test the most effective curricula for various groups of young people and the administrative arrangements required. The

schemes would be locally based, and the choice of centre would be made in the light of:

social priorities (e.g. high youth unemployment, or especially low rates of participation in post-school education); and
local interest, facilities and other circumstances (including employment opportunities, and the availability of physical capacity for the courses).

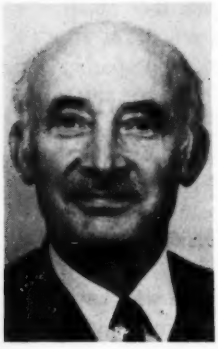
After the centres had been selected, interested bodies in each area would be invited to participate in the planning and development of courses and a broadly based steering committee would be set up in each area.*

Curriculum development

Responsibility for examinations and curriculum development in further education is widely dispersed and there is no single controlling or coordinating influence. One way of providing a more coordinated and cohesive approach would be to set up a central unit for further education curriculum review and development, consisting of a small full-time staff drawn from the further education and training services, assisted by HMI and working under a steering committee. The unit's main role would be advisory. It would maintain an overall view of the type and extent of further education provision and the matching of this provision to the needs of employers and of students. It could call attention to any gaps in provision, suggest new approaches and help to identify latent needs.

* A Government statement on vocational preparation will be published during the summer. Copies will be available from the DES.

The educational needs of the 16-19 age group



EDMUND KING

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Since the early 1960s much has been written about the educational needs of the 16–19 age group, but from many different standpoints, in different contexts, and with different intentions.* Few writers — and still fewer actual surveys in the field — have recognized that among all the details of observation and comment there are important generic challenges to previous assumptions and practices at this age level. These are challenges to all inherited systems at the secondary, further and higher levels alike. They are full of profound implications for wider teacher/learner relationships and for the connexions (if any) between education and work experience.

In order to understand British 16–19 year olds, it is vital to recognize that the present 'frontier world' for this age group is common in many ways to countries like our own. Elsewhere there may be keener crises of decision because the growing numbers of enrolments (despite some occasional hesitation) have reached totals which are sometimes twice or three times as great as our own enrolments of 17–18 year olds. Everywhere in industrialized Western Europe the numbers of enrolments exceed those in Britain by at least 50 per cent; these are the human resources for further education and training. However, this rapid two or three-fold increase in enrolments, which has taken place within a period of about twenty years, has introduced problems of accommodation, content, and orientation which are complicated by frontier questions between general education and vocational training, and by institutional and professional rivalries that make our own seem tame. Meanwhile, grave and unprecedented needs are only half-recognized.

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* An article limited in scope, as this one necessarily is, must point to fuller sources of information elsewhere. The most important sources are two Council of Europe publications and two books reporting field research: H. Janne and L. Géminard: *The Educational Needs of the 16–19 Age Group* (1973), and the 'Country reports' with the same title (1973); and E. J. King, C. H. Moor and J. A. Mundy: *Post-Compulsory Education I: A New Analysis in Western Europe* (1974); and *Post-Compulsory Education II: The Way Ahead* (1975). See also the special issue of the *International Review of Education* 1975/2.

The British problem

The most ambitious counting of our own full-time enrolments just before 18 suggests that some 30 per cent may be in education or undergoing some kind of training (three times the figure for the early 1950s). In France, the corresponding percentage is more than 46 per cent; in Norway, over 70 per cent; in Sweden, just under 86 per cent; in Japan, about 95 per cent. Despite a temporary setback in 1971–72, the Swedes expect growth to continue, as do the Norwegians.

A qualitative look at some of these figures reveals that about one-third of our own full-time over-16s are not 'in school' at all, but in 'further education'. Though many of these are preparing for A-levels (about a quarter of all last year's A-level entrants), they are classified as 'men and women' and not as 'boys and girls'. They rub shoulders with students preparing for Ordinary National Diploma, City and Guilds qualifications, and a wide range of pre-vocational or directly vocational courses. They work with many who have come to supplement or diversify previous schooling, some after employment or domesticity.

Similarly the Swedish over-16 figures include one-fifth who have returned to the 'comprehensive gymnasium' after being in employment. Many choose pre-university courses, but there has been a vocational renaissance, not only because of official prompting but because of students' disaffection for lengthy theoretical studies, perhaps with the risk of unemployment or conversion courses at the end of higher education. The Swedish authorities — like those in many countries including our own — are strongly encouraging the development of 'applied studies' across all post-secondary education, and the indications are that these are popular. This brings a clearer perspective to some of the needs of 16–19 year olds.

Nevertheless, reliable evidence everywhere shows that students of almost every type increasingly want to keep their options open. My own team's survey* showed that a good job and a desired life-style were the predominant reasons for staying on in post-compulsory and post-secondary education — as is natural and right. However, the same young adults who are increasing those enrolments recognize — often much better than their teachers — the perspective of job-changes and altering personal and social relationships which make traditional categories and curricular demarcation questionable, if not outmoded.

Indeed, one of the ironies of the debates about the over-16s is is that while there is everywhere a demonstrable gap between the perceptions and aspirations of the students on the one hand and those of their own teachers or principals on the other, there is often close accord between student views and those of leading officials such as vice-chancellors, ministers, and educational researchers specializing in this field.

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* King, Moor and Mundy, op cit.

Various influences

Many influences combine to make an immediate and reinforced impact on young adults' perceptions of educational desirability and usefulness. They are: the vistas of job-changes ahead (as in the 12 per cent job-change forecast officially in the EEC over the decade from 1975–1985); the consciousness that no one avenue has a monopoly of professional advancement and a satisfying life-style; the omnipresence of alternative communicators and learning opportunities; the inherent obsolescence not only of subject-matter but still more of its technological and social significance; and the whole field of changing relationships between men and women, social and national groups, and formal education and work. All these give us clues to dominant educational needs.

So much for the general context which surrounds education and training, often making it seem ineffectual and irrelevant even from a technical point of view and at the moment of instruction. Particular grounds for discontent may be evident too. British secondary school specialization in particular has already boxed up the curriculum for many students into either/or groups of subjects so that only a minority of A-level candidates, for example, are both 'arts' and 'science' in most schools; and very few indeed combine both of these with a clearly social study or a technological or commercial interest.

That is, of course, more true of schools than of further education. In some further education for 16–19 year olds combinations of subjects appropriate to European studies, for example, or environmental studies in the world at large, are as available as they would be in post-secondary education. It is perhaps significant too that some 60 per cent of entrants to CNAA-type courses come from further education courses, not schools. These are some of the reasons for the growing migration from school to college at the age of 16.

Personal profile of learning

The simple fact that education does not even begin to happen unless the young adult accepts and in some measure identifies himself with the instruction offered is more significant and has many implications for every type of learning in this age range. He must carry it forward himself, building it into his self-recognition and style. The rich variety of learning resources available, and the incomplete possession of appropriate knowledge and techniques by any teacher in these days of rapid change, make educational success depend as never before upon a large measure of autonomy for the student — at least in his own work-programme.

That obvious need arises not only from new combinations of subject interest and novel career perspectives but because at this level the importance of a varied 'personal profile' of learning becomes clearer. We have long recognized this by offering, for example, rather elementary German or Russian to advanced

scientists; but we hardly ever offer a 'crash course' in science or production, or even commerce except, in the latter case, for the supposedly dull. Sometimes further education does, but a good look at what actually happens shows that because most enrolment officers are so busy and course-bound, little real attempt is made to look beyond institutional immediacy. However, many students resent this kind of imprisonment. In some countries they rebel; in other cases they drop out; many go through the hoop under protest. Educationally and in manpower terms, this is frustrating.

There is much evidence to show that in such cases girls, rural people, the highly intelligent, and the resourceful either drop out or do not come in at all. The really poor, some immigrants, and others who are conscious of having crashed through the career barrier do not ask too many questions. A career need is satisfied, but is it a genuine educational need? And does it help the manpower situation or the development needs of the educational system itself at a time when all other systems are assailed by the challenge of change? Any learning or training at this level, and in these times, must be a real preparation to cope with the uncertainty ahead, though on the basis of strong identification with learning and mastery of its latterday skills.

In the days when well-defined categories amounting to about 5 per cent or 10 per cent of the age group were being recruited for clearly recognizable courses in higher education, or top slots in the employment structure, it did not matter much economically how the rest were weeded out. It could well have been by Latin and Greek or the Chinese classics. Socially and politically, that situation would now be intolerable. Technologically and in terms of international competition it is unacceptable. To develop both humane understanding and our country as a whole, we need not merely a plural and complementary society but the resourceful creation of knowledge and insights from educated experience.

Research evidence and everyday common knowledge show that young adults are very conscious of these desiderata. They criticize us for our narrowness, if not humbug; for we have decided by outmoded criteria of occupations or value what matters in education and training. Some needs we cannot know by the nature of present circumstances, even though our decisions (especially in formal education) are so potent in pre-empting or precluding the future. The young adults whose future it is will not long accept that situation. Though they have been docile in Britain, they have often been restive or worse on the continent. What looks like political discontent is often educational, or concerned with occupational structures and the life-styles that go with them.

Towards the end of school-life at about 18, or even earlier for the great majority, we have inherited what for most people is a 'once-for-all-time' situation. Amidst present changes that is a nonsense; yet it is reinforced by scholastic habits which are merely organizational, not essential. I have already discussed 'an

educational profile'; that can also be a profile of the learner's pace — faster in some things, slower in others. Recognizing educational needs applies not only to cognition but to subtler things like motivation (which may arise out of a job, or love and enjoyment). People who have been only too eager to get out of school may have a frustrated readiness for learning, or at least a dormant potential.

Hence the enormous value for so many students of the fresh start that migration from school to college offers, whether at 18 or 16. More important than that, even, is the opportunity to 'board the educational train as and when necessary'. In Britain we have a magnificent tradition of adult education, formal and informal. Our further education provision in its astonishing variety and polyvalence is in some ways the envy of foreign observers. Yet there are snags and inconsistencies. We have no real system — not even a real overview of what should be the complementary interaction or symbiosis of secondary and further education at the 16-plus level. We do not make educational capital from the evident interconnexions between self, career, work and society in learning and training at the post-secondary level, or even before.

Yet the young adults show in scrupulously recorded evidence that they do see those interconnexions very clearly. They also see many of their implications for educational organization and teaching/learning relationships. Though details of continental practice would be out of place here, important indications of trends and new responses are given by a careful study of our neighbours, and still more by analyses of current debates abroad.

Continental traditions

Far more than in Britain, continental traditions have markedly divided 'general' from technical and vocational education. However, the whole range is fully provided for at the secondary stage together with an array of specific certificates. In principle, the *lycée* or *gymnasium* has led only to the university or teachers' institute, in either of which as many as 85 per cent or 90 per cent of those with A-level equivalent enrol. The academic secondary schools were traditionally non-vocational, though their certificates or marks have understandably been used for recruitment to particular jobs and life-styles. However, the sophistication of industry and commerce and the growth of 'applied' higher education have led to the development of specialized academic secondary schools with a technical, commercial, or industrial orientation (as in Germany, Italy, or formerly in Sweden) — especially at the upper-secondary stage.

Alternatively, the trend has been like that in modern France where a wide range of optional emphases (thorough, but not based on narrow specialization) lead to the *baccalauréat*. From an original five or so soon after the war, these special groups of courses now number almost thirty. Within the general *lycée* framework they

include specialization in communications sciences and applied social studies, for example.

All such courses or establishments have much in common, having a broad academic curriculum to support the occupational perspective, which is increasingly emphasized in France, for example, by an elaborate and extensive guidance system. Nonetheless, courses or establishments or both are usually watertight in themselves. The vocational/technical element of specialization even in 'academic' schools has a no-nonsense life-orientation which does not, however, preclude the prospect of university admission, to which in many countries the school certificate gives a right. A shift in favour of the sciences and mathematics as prestige subjects, and even a 'vocational renaissance' at this level, have recently been remarked upon.

The technical and vocational sectors

The less 'academic' technical and vocational sectors in separate establishments (and often under different ministries or departments) have recently been under fire despite their long contribution to industrial strength. For example, all young Germans leaving school at 14 or 16 have for more than half a century been required to attend vocational training schools part-time until they are 18; and many at the same age level receive full-time training, sometimes to the age of 19 or 20, to obtain a vocational qualification. The same, separate full-time pattern has prepared accountants, surveyors, caterers, and specialists for design, tourism, and the motor industries in countries like Italy. This all counts as an upper-secondary education; and now, in some countries, it confers an equivalent right of admission to further and higher education (in which most countries make no formal distinction, though social considerations do). The strength of the vocational/technical sector is shown by the fact that over 40 per cent of the Italians in post-compulsory education are enrolled in it.

On the other hand, technological and commercial sophistication make the strict 'package deal' kind of preparation not only socially unacceptable in its predestination but questionable in its usefulness to industry. 'Polyvalent' preparation for flexible adaptation to new occupational needs and opportunities has required substantial and rapid modification of institutional structure, curricular content, and still more of attitudes and relationships across the whole upper-secondary/lower-tertiary panorama. The most remarkable single feature has been in postponing final decisions and in introducing common elements or interchangeability.

Usually, the first changes have been structural. Short-term apprenticeship centres (once very common) and short-course collèges (as in France) have gradually been absorbed into the upper-secondary mainstream. Alternatively (as in some parts of Germany) formerly distinct provision has been combined in a comprehensive *Kolleg* rather like a sixth-form college in purpose,

but with a stronger vocational coverage. Indeed, in the post-1971 Swedish *comprehensive gymnasium*, after 16 both the shared elements and the 'applied' specializations have been distinctly strengthened. Originally, the French *instituts universitaires de technologie* were intended to overlap this attainment-level as well as the over-18 level which they now cover: and in Japan and Germany there are interesting innovations of that kind (for example, the experimental *Oberstufenkolleg* at Bielefeld). In this whole area of provision, much could be learned by comparative discussion and analysis, not least because Britain has so much experimentation to show.

Officially defined categories of institution, funding, teachers, and certificates make the evolution of existing practice difficult to administer or even authorize within any previous framework. That is why alternative institutions, or new links (for example, with local enterprises, or between one institution and another), or a new periodicity of study and training (as in sandwich courses or provision for a return to this attainment-level at a later age) are sometimes found more useful. There is also the whole question of new media such as television programmes, cassettes for sound and vision, and multi-media presentation. Several Western European countries now entitle their workers to a certain amount of 'recurrent education' per year on full or part pay — usually at the same approximate level of study as the 16 – 20 age group.

'Young adult' education

All of this means much rethinking of upper-secondary and lower-tertiary education in terms of 'young adult' education, no matter who the students are, and no matter whether they are 'stayers' or 'returners'. Career realism and trueness to life are essential. Yet there can be no predestination, no pretence of non-existent certainty. This kind of perspective is being faced realistically in Sweden and Norway, not in terms of the older academic 'second way of education' familiarized by the Germans and Austrians but in ways which resemble the better features of own own further education provision.

This kind of orientation calls for readjustments even before the age of 16, but still more in the over-16 phase. For reasons of motivation and interest, as well as for personal and national utility, a majority of students seem to require a 'real life' focus if not actual training, especially in countries where more than half the age group stays in education to about 18 or 19. But what once seemed a businesslike preparation for either higher education or for immediate vocational use is now seen to be an anachronism. France's 1976 plans (to take effect next year) and the rival Italian parties' plans now before parliament concur on one main principle: to make all education common until the age of 16, and to introduce after that (to about 18) only pre-vocational perspectives, but with a broad and deep awareness of occupational, social, and

world changes caused by technological development. Content in all programmes is challenged by change; but teacher-reorientation and student-preparation for increasing self-reliance are no less important necessities.

Modernization of the curriculum

Some studies of educational reorientation at this level (notably in the Schools Council Working Paper 45*) offer valuable suggestions for the modernization of 'curriculum' in its broadest sense; but, apart from the restrictions imposed by their initial terms of reference, most such studies underemphasize the point that distinctions between 'traditional' and 'non-traditional' students are misplaced. All students at this level are in a real sense 'new', not only for contextual reasons in the world surrounding them and awaiting them, but because they are being enrolled in such numbers for the first time in history, overwhelming the institutions in which they are housed, and changing the character of even 'traditional' establishments. For the first time, the average young adult is voluntarily staying on to begin the first stage of his adult education, which must be essentially long-term or at least recurrent in some way. He must be prepared for that stage when he will be beyond the reach or competence of his teachers. Young adults can vote and marry without parental consent at 18 and can own property. In some countries young men and women are liable for military service. This world is before the eyes of everyone, ever closer. Those on life's threshold are in touch with it already.

Barriers between social groups and nations, especially among the young, are crumbling despite pessimism and some setbacks. Many barriers between these enrolled young adults and those outside are blurred. Studies of the young adult population who are not enrolled or undergoing part-time training (as they must be, for example, in Germany) show that supposed difficulties in considering many young adult needs generically arise from the institutionalization of courses, credentials, and the teaching professions in their variety. They are problems of demarcation, not real educational problems.

Consequently, at least some educational needs of young adults (personal, social, and professional) can be met initially by substituting permeable membranes for the hitherto formidable barriers between categories of establishment, course, credential, and access to teaching and learning. By that I mean not only providing multi-purpose open-access 'colleges' to serve the age level 16 to 19, and the varied types of attainment and need associated with it, but encouraging new attitudes and educational styles to accommodate a perspective of change and the development of multi-faceted complementariness.

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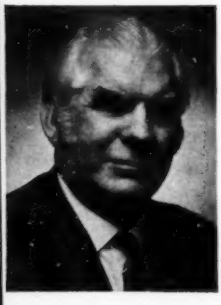
* *16–19: Growth and Response. 1: Curricular Bases.* Evans/Methuen Educational, 1972.

There are examples in Britain and abroad of experimental institutions, programmes and relationships. We can learn from many of these, not just in terms of copying or modifying but still more in recognizing that there are new types of question to ask. Administrators and teachers now come together frequently to discuss common problems and responses; but in the last resort the criterion for success will be student response interacting with the insights of others and contributing to them. Long-term educational effectiveness (in the sense of the cooperative self-reliance discussed above) depends on providing now generically suitable opportunities for ordinary young adults, embracing the whole field — general, pre-professional, and vocational.

Experience shows that this can be done by coordinating existing resources and by consortia, as well as by direct innovation. It shows too that there need be no loss of attainment in the bright and 'near-traditional'. There is the added bonus of preparation for what must be a 'communications society' ahead. The vocational/technical sectors in turn gain in flexibility and professional skills by being no longer cooped up in batteries. The pay-off in national manpower and international competitiveness is becoming evident. The perceptions of the 16–19 age group are not always statesman-like at the conscious level; but their perceptions of educational need, propriety and feasibility now often coincide with those perspectives.

Trends 1976/2

City and Guilds Foundation Courses



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The City and Guilds of London Institute has traditionally catered for the more practical, less academic type of student over the age of 16 through its schemes and examinations for apprentices and trainees in industry. Until recently, the great majority of these young men and women were part-time students who had left school and entered employment as early as possible. With the raising of the school leaving age, however, many of these young people are staying on in full-time education, ultimately going into the sixth form of a school or on to a college of further education, and are deferring their entry into industry or commerce until the age of 17 or 18. As these are not the traditional type of sixth formers following GCE examination

courses, there has been a considerable increase in the number of requests from schools and colleges for permission to enter full-time students for City and Guilds examinations.

The Institute has discouraged such action because City and Guilds schemes are largely vocational, although they do have a general education content. They are devised for young people who have left school and entered a skilled or semi-skilled occupation in industry or commerce. The courses are aimed at developing that particular craft or skill and are highly specialized. They are constructed around a programme of four days in industry gaining practical experience on the job supported by one day a week attendance at a college of further education. Since many young people in full-time education have not yet finally decided precisely on what type of work they will enter after leaving school or college, these specialist courses would be of little value; in any case, the concurrent practical experience which supports such courses would not be available to them.

Pre-vocational courses

In an effort to deal with this new situation, it was suggested that the Institute should put its experience in providing vocational education to good use by offering courses and examinations of a pre-vocational nature suitably designed for young people in full-time education. The Institute therefore decided to investigate the possibility of providing such courses in cooperation with schools and colleges so that, in the words of the Newsom Report, education would be presented 'in terms more acceptable to the pupils and to their parents, by relating school more directly to adult life, and especially by taking the proper account of vocational interests'.

City and Guilds Foundation Courses, as these courses are called, are being developed with the following broad aims:

- to make the individual more aware of the social environment and of his or her place in it;
- to provide an awareness of the implications of technology, at local, national, and international levels, as they affect the individual as a member of a technological society;
- to introduce some of the considerations and constraints and responsibilities existing in the work environment;
- to provide a broad educational base on which an informed choice of career can be made;
- to provide a level of achievement which will allow entry at an appropriate level to courses of further education.

The course programme is therefore divided into three main sections covering general education elements, technical/vocational elements, physical education, extra-curricular activities, and

careers guidance. Detailed discussion of the arrangements made by individual schools and colleges to devise their schemes and examine their students will have to take place. However, the following suggestions are among those that might be considered.

The general education elements will need to be directed towards the types of interests appearing in the specialist vocational curriculum, and particularly towards written and oral competence. This section would include within one group such subjects as English language, history, and geography, preferably taught as an integrated group of subjects dealing with the world as it exists in a technological age. A number of elements could be included in this section — for example, the historical and geographical basis for the economic and cultural development of, on the one hand, the student's local environment and, on the other, both industrialized and less well-developed countries. This would involve a study of communications, distribution, and availability of resources, and matters of that kind. Written and spoken English, so essential to a successful career in industry or commerce, would be a significant part of such a course, particularly as a vehicle for discussing and commenting on all its main elements. Looking to the future, it might well be desirable to include a European language in the course, but this should be treated informally.

The vocational subjects are intended to meet the requirements of the wide variety of student interests and it would seem appropriate to fit them into a number of broadly based options, each covering a range of activities. The choice of activities will depend on the needs and interests of the students and on likely career opportunities. Engineering, construction, agriculture, horticulture, health, welfare, and personal services (hairdressing, beauty, home economics, catering, nursing, child care, social work) are examples of the vocational subjects that might be covered. An additional specialized group might be commerce and business. These are not subjects within the Institute's normal brief but they might be attractive to 'round off' the provision for foundation courses within a school or college: the Institute is now cooperating closely with the Royal Society of Arts to devise a suitable curriculum.

Broad approach

The approach to this area of the curriculum should be broad enough to allow an ultimate choice of occupation, but at the same time it must be sufficiently specialized to provide a real incentive to the young people attending the course. Taking the engineering and construction industries as an example, this would include mathematics; elements of physics, particularly applied mechanics and electrical sciences; materials science; technical drawing, which would include a reasonable amount of solid geometry as well as an introduction to industrial-type drawings; and workshop techniques and practice. These subjects would be closely related and

used to develop a technical association relevant to the student's environment rather than as academic subjects in their own right. Graphics, for example, are much used by people in industry and could well form a substantial element in the mathematics teaching. There are also numerous examples in the workshop where a knowledge of simple geometry and trigonometry is essential to the making of a particular component. It should not be difficult to devise a number of projects suitable for analysis, design, construction and criticism, which would be well within the range of students working even in small laboratories and workshops. The workshop emphasis would obviously be on precise engineering, possibly pattern-making, and carpentry and joinery, rather than on aesthetics. This is in no way a criticism of the aesthetic approach, but the technical problems provide the practical vehicle through which much of the mathematics, applied physics, and geometry is made more live and purposeful to the students.

Years of experience show that this type of approach is successful with many young people who have left school at 15 and 16, and there is every reason to believe that, given sufficient realism, it should be equally acceptable to the same type of young person staying on for more full-time education. The subject matter, however, should be treated in such a way that the student really understands what is being taught and how it applies to his life and environment, both now and in the future.

Closely related topics

The type of study chosen for these specialized sections would clearly need to be closely related to the topics chosen in the general education section. Foundation courses will probably be offered to post-16 students, although a start could well be made a year earlier at 15-plus. They will normally run for one or two years, and students will be examined at the end irrespective of age. The need to plan a curriculum and to arrange for groups of teachers to participate in the various areas of study is clear from the proposed pattern which envisages about 40 per cent of the course devoted to general education, about 40 per cent to technical/vocational subjects, and the remaining 20 per cent to physical education and extra-curricular activities, including work and career guidance.

The examination could be external, or internally set, externally assessed similar to the Mode 3 CSE, or a combination of both internal and external assessments. These types of examination have been in existence in further education for over fifty years and enough is known about examination techniques to ensure that an acceptable standard could be maintained while, at the same time, allowing considerable internal flexibility. It should be possible to avoid making too heavy a demand on teachers' time, particularly where the number of students involved was fairly small.

Feasibility and pilot studies

During 1974-75 and 1975-76, some fifty colleges and schools cooperated with the Institute in a series of feasibility and pilot studies. The syllabuses for these were prepared by individual colleges and schools to meet the specific needs of their students. The Institute has now produced for consideration and comment guide schemes for five courses which will lead to the award of the City and Guilds Foundation Certificate.* These courses cover community care, construction, engineering, the food and the science industries. The essential nature of each course is that it will provide a complete integrated curriculum with the components interrelated and overlapped according to the way the college or school chooses to arrange its teaching programme. The six major components of the course are intended:

to provide a broad educational base on which a more informed choice of career can be made;

to introduce the student to the disciplines of the working environment and to offer practical experience wherever possible;

to provide an awareness of the functions of the manufacturing, business, and service industries at local, national, and international levels, and of their implications for the individual;

to help the student become more aware of the social and industrial environment;

to provide an opportunity for the student to continue general education, and to improve literacy and numeracy skills;

to encourage the student's personal development and leisure activities.

The Institute hopes that these courses will complement and fit in with the concept of gateway courses put forward by the Training Services Agency and that they will not be in conflict with any other proposals. There is a need to experiment in this area of education, and the Institute's long experience with the less academic school leaver shows clearly that such students are greatly interested in, and highly motivated by, a course that has a clear relationship to future employment. Foundation courses, based on broad occupational areas and including careers advice, therefore offer a proven alternative approach to full-time education for many young people preparing to start their working life.

* A brochure outlining the City and Guilds approach to foundation courses is available from the City and Guilds of London Institute, 76 Portland Place, London W1N 4AA. The Institute has also published a pamphlet (price 50p) containing full details of the five schemes, including learning objectives, content, and assessment procedures.

Self-directed learning for 16-19 year olds

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The current expansion of sixth forms on a national basis to include students who would not previously have been thought of as sixth-form students is posing problems for teachers; among these problems is the need to help all students develop autonomous learning skills and attitudes.

The Schools Council has recognized this in one of its reports* which advocates the inclusion of more private study-time into sixth-form timetables. Yet is this not merely a partial answer? What students actually do with their private study-time is crucial.

A recent study† of school leavers' attitudes to continuing education and employment indicated that 20 per cent of the 18-plus cohort were unsure of whether to continue with any form of further education, the main factor being that they were 'fed up with study'.

The financial aspect of leaving school and going to work is an important contributory factor, but 'being fed up with study' might also be caused by the fact that progression towards learning autonomy does not develop at the same rate as other aspects of developing maturity. The problem is not new and arises from long-standing procedures in which pupils are heavily conditioned to become teacher-dependent in terms of why they study, what they study, and how they study. They are led by this to expect that information about performance, a necessary condition for learning, will be regular and frequent, and will come to them whether they seek it or not. Many students therefore do not generate, and perhaps do not know how to seek, information relating to their own study behaviour. Indeed, this adaptive and assimilative process may be constrained by a teacher-dominated education, if one

* *Private Study in the Sixth Form*, Schools Council, 1975.

† *Attitudes of Young People to School, Work and Higher Education.* A preliminary report by Gareth Williams and Alan Gordon of Lancaster University's Institute for Research and Development in Post-Compulsory Education.

extrapolates from the conceptual systems theory of Harvey, Hunt and Schroder which proposes:

> '. . . a person's concepts are ordered according to certain patterns of organization. It is assumed that one of the most important structural characteristics is a degree of abstractness or conceptual level. A person at a high level is likely to explore situations and to be creative and adaptable when faced with a changing environment. Optimal environmental conditions which allow the highest levels to be reached are characterized by maximum information feedback and allow the person to learn from that feedback'.

How then can we help 16-19 year olds to develop self-monitoring systems that lead to more effective study performance? Can ways be found to bring together what we know of the learning process, group dynamics, and attitude change, in such a way that it will work to practical advantage to achieve the metamorphosis from teacher-dependence to self-dependence? There seems to be a need to develop a programme which not only seeks answers to questions such as: 'In which areas of study skills and techniques are students most lacking?' but includes as a fundamental objective the use of methods that will enable students to develop mature, autonomous learning behaviour. Not to include such an objective would be to offer a mere collection of hints and tips about how to study.

In view of limited resources and large numbers of students, we needed to carry out research to determine what conditions will best improve learning skills and attitudes. Since 1974 an informal pilot project at the University of Surrey has been looking at these issues in a way that relates theory to practice.

The self-directed learning project

Initially the project considered study problems faced by first year undergraduates, but attention became focused on the need for intervention programmes for other post-16 groups, and for their teachers.

The literature of study and self-directed learning includes a number of textbooks on study techniques,* the Open University's Student's Guide to Study, and the BBC's programme, *Use Your Head*. Yet literature and broadcasts of this sort, useful though they may be, beg the important issue. They are of value to those students who are already capable of directing their own learning; but what of the others who do not possess the very skills that are needed in order to maximize what they discern from the text? To break into this circular problem, an analysis was made of the objectives considered to be important to the development of self-directed learning. The list was not all-inclusive and simply provided a basis for further development. Students would naturally

* A bibliography is available from the authors.

have different priorities in terms of their individual needs, so the list, not in order of priority, read: each student should:

increase his reading speed and comprehension;
know how to use libraries efficiently;
understand some functional aspects of the central nervous system such as perception, memory, rhythms of work and rest, concentration;
be aware of personal characteristics that might affect his learning style, e.g. extroversion-introversion, visual-verbal orientation, divergence/convergence, home background, education;
adopt appropriate physical conditions for study, e.g. temperature, noise, nutritional state, sleep;
evaluate different sources of information and their validity and reliability;
think about, create, and use efficient methods to organize his personal 'data bank';
recognize and make the best of various teaching strategies encountered;
recognize the value of learning strategies: asking questions, integrating ideas, working with someone else;
recognize good oral and written styles and diagnose and correct shortcomings in his own communication skills;
adopt efficient note-taking and review procedures;
understand the nature and function of facts, concepts, principles, values;
predict, plan and organize the use of his time economically;
monitor his acquisition of all these skills.

Thought was also given to the methods which would best involve the student in the development of their own study skills and attitudes. To improve subsequent student performance, such methods would need to contribute not only to developing knowledge and understanding but to attitudes of commitment. Methods chosen should contribute to attitude change by increased participation and self-determination of objectives and methods.

The merits of discussion groups as an agent for attitude change are well known. However, many people are less aware of the strength of the group as an agent for attitude change where the group members set out to assist each other to meet individual goals by a process of mutual support. The method is not, of course, a panacea, but it has been used with considerable success in psychiatric counselling groups at one level, and by diet and weight control clubs at another. These methods are time-consuming, however, and had to be adapted so that limited staff-time and resources could be used economically.

Short course

A short course was therefore designed to include a small number of learning packages which would give some responsibility to

each student and would form the bases for group activity. The time spent in working through the packages would be interspersed with group counselling sessions. This would give an opportunity for group support of individuals and a further determination of objectives. One would then be starting at the point of student expectation of what a course should be. Progression from this expectation could follow.

Two pilot courses, one of eight two-hour sessions with twelve students, and a second of seven sessions with sixteen students were conducted to obtain a closer view of the problem. All the volunteers were interviewed and asked to complete a questionnaire giving information about their study habits and attitudes before the course.

The first meeting took the form of a brief introduction to the philosophy expressed in this article, a group counselling session based on students' responses to the questionnaire, and an outline of the proposed programme of action. The programme consisted of four learning assignments, each consisting of a package of material and activities. Packages were held in the University library and each assignment had to be completed before the relevant group counselling activity.

It was pointed out that this was an experimental programme in which the students should gain by the extent to which they contributed; that constructive suggestions for the improvement of the course would be sought; and that, in view of this, all students were expected to commit themselves to completing the course. Anyone who wished to withdraw was given the opportunity to do so at this point, but no one did. The subsequent outline of the programme was:

Week two (individual assignment). *The effective use of time.*
A unit including a discussion document on methods and problems of planning the use of time in terms of strategies and tactics. The student had to undertake four game activities, each of which had a time component.

Week three (individual assignment). *Learning strategies—receiving.*
A unit including a tape-slide presentation of study techniques relating to lectures, reading, discussion groups and informal learning.

Week four. Group counselling session relating to the previous two individual assignments.

Week five. Individual assignment which consisted of viewing two video-recordings from the *Use Your Head* BBC series and note-taking, using suggestions from Unit three.

Week six (individual assignment). *Learning strategies — reproducing and using.*

A unit which included a discussion document on aspects of understanding by finding out, creating ideas, structuring knowledge, and a task involving these in the writing of an essay.

Week seven. Group counselling session relating to the two previous assignments.

Week eight. Group counselling session in which the course was reviewed and evaluated in writing and then by discussion. This was followed by a look at the future development of student thinking about aspects of study. The programme was amended for the second course to include a group counselling session on concentration and attention in place of assignment five, and the last two sessions were combined.

All of the students completed the courses in full and their evaluation of both courses produced constructive suggestions and positive comment about their value. They were firm about the need to introduce activities of this sort at the post-16 level. As a result, a short four-session in-service course for teachers was held validating some of the individual assignments; and a course was provided for sixth-form students of St Martin-in-the-Fields High School. This six session course with twelve lower-sixth students formed an option in the School's general studies programme. With the exception of initial interviews it included, in a modified form, all the basic areas from the undergraduate course.

Evaluation was carried out first by interview with pairs of participants, and then by group discussion. It produced comment that was very strongly supportive of the further development of this approach to encouraging self-directed learning; the group counselling sessions were especially appreciated. Constructive suggestions were made to indicate improvements to individual assignments and comment was unanimous that a longer period of time should be devoted to the course, and that consideration should be given to introducing this type of work earlier, in the fifth year.

Extensive development needed

There seems to be little doubt that extensive development of the work outlined in this paper is needed.* The work is based on premises that people are potentially self-directing and that a major objective of the educational process should be to enable them to fulfil this potential. A substantial task for the teacher is to discover how best to help the student do so. It is hoped to extend the work of the project by:

* The authors would be pleased to hear from members of staff of schools and further education colleges who would be interested in being associated with the project.

1. The further development of individual assignments to meet study objectives for the 16-19 age group.

2. The arrangement of teachers' workshops so as to:
   involve them in considering the philosophy expressed in this paper of helping the young adult to identify for himself the study areas in which he can be successfully independent;
   enable teachers to initiate and develop 'learning to learn' assignments;
   investigate further the use of group counselling as an aid to attitude change.

Trends 1976/2

Genetics and the school system*

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'There were well over two and three-quarter million boys and girls in maintained secondary schools in 1962, all of them individuals, all different. We must not lose sight of the differences in trying to discover what they have in common' (The Newsom Report). But how much of the individuality is due to what the individual is 'born with' and how much depends on upbringing?

Lord Chesterfield in 1784 expressed his views on heredity and environment in a letter to his 15 year old son when he said that 'people are, in general, what they are made, by education and company, from 15 to 25; consider well, therefore, the importance of your next eight or nine years — your whole future depends on them'.

We now know that there are many reasons for the differences between people. Broadly speaking they are divided into those that are hereditary or genetic on the one hand, and those that are environmental on the other. This is not a simple clear-cut matter because heredity and environment interact in the production of each and every character, and we cannot say how much each component has contributed; the proportion of the inherited to the

* A shortened version of a chapter in *The Growing Brain: Childhood's Crucial Years* to be published by NFER in June 1976.

environmental component is unique to each individual. Each one of us has been formed by a sort of genetic lottery and is only one of a vast number of 'possible children' who might have been conceived and born if a different sperm with its unique gene arrangements had chanced to fertilize the mother's egg cell with its unique gene arrangements.

The origin of human individuality

If we compare chromosomes to cards for a moment, we can say that the natural (genetic) uniqueness is basically due to the shuffling of the chromosome sets during gamete formation and the rearrangement of the determinants (genes) carried by them so that each egg or sperm, which carries one half set of twenty-three chromosomes, is unique. The seal is set upon individual uniqueness at the moment of fertilization when the double set of forty-six chromosomes is re-formed. From this fertilized egg every cell in the body, wherever it may be located, is developed by repeated division. Each cell carries the unique double set of chromosomes.

It is, to some extent, possible to make an estimate of the relative importance of heredity and environment by using studies on twins and a whole range of other observations. One-egg (identical) twins are formed from the splitting of a single fertilized egg and thus have a common hereditary endowment. They are duplicate human beings; they have identical genes and therefore start with the same potentialities. Identical twins can be used to estimate the differences that arise mainly from the environment because the differences between them arise largely from the variations in the world around each one and in their experiences; even before birth their different positions in the uterus put them in special environments. Identical twins may sometimes be reared apart in very different home environments— when they are orphaned and separated at birth, for example — yet they remain remarkably similar in IQ.

Two-egg twins (non-identical) have quite different gene outfits since each egg has been fertilized by a different sperm. Apart from having shared a common uterine environment for nine months, they are in fact no more alike than brother and sister. We can use them to estimate the shades and type of genetic differences that arise within a family since the family environment is essentially the same for both of them. If the IQs of separated identical twins are measured, they prove to have, in statistical jargon, a correlation of about 0·87 compared with a coefficient of 0·45 for non-identical twins brought up together. A correlation of 1·0 would mean identity in intelligence while zero would mean complete lack of identity.

Heredity, then, does seem to be a highly significant factor in IQ measurements. If a few children of the same sex and age were picked out at random from the playground of a comprehensive school, the average difference between their IQs would be about

17 points; with non-identical twins reared together it would be 12 points and with identical twins reared apart it would be 6 points. The effects of environment do not, according to this evidence, seem to have a very great effect on general basic intelligence. But the statistical evidence provided by twins suggests that the influence of the home, and particularly of how much a child is talked to, read to, or reads to himself, affects reading and spelling ability. Arithmetical ability, however, seems to be determined more by native wit and not so much by environment. Indeed, distinguished mathematicians have come from a great variety of backgrounds.

History of eminence

Francis Galton's family trees of eminent men show that the chance of an eminent man having an eminent relative is high. In his most celebrated study Galton, who pioneered studies of family similarities in mental qualities, showed that the 100 most eminent members of 100 families had 'eminent' relatives in the following numbers: 32 fathers, 41 brothers, 48 sons, 17 grandfathers, 18 uncles, 22 nephews, 14 grandsons, 3 great-grandfathers, 5 great-uncles, 13 first cousins, 10 great-nephews, 3 great-grandsons, and 31 other more remote relatives. Galton sought to show that his results were inconsistent with a purely environmenal interpretation by pointing out the existence of two classes of men with equal advantages; in one they have high hereditary gifts, but in the other they have none. Using as his comparison the sons of eminent men and the adopted sons of Popes (as an example of the ablest men of their families) and other dignitaries of the Roman Catholic church, Galton found that the common combinations of able son and eminent father were not to be matched among Roman Catholic ecclesiastics by an eminent nephew and eminent uncle (a nephew or more distant relative was often adopted by a Pope to stand in place of a son). He went on to emphasize that environmental theories could not account for the fact that many brilliant men, such as Newton, D'Alembert, Gauss, Laplace, Whewell, Mill, Faraday, Kant, and Kepler, were the sons of poor peasants or artisans: they turned up out of the blue.

On a more ordinary level, as a testament to genetic grittiness, there is often conflict between parent and child. Even though that child has a better chance of being like his parents than anyone else in the world, his genetic individuality overrides the parental environment.

Heritability and education

Physical variation in a class of adolescents is a striking feature; differences in height are particularly noticeable. In Britain, because children usually get enough to eat and are seldom stunted by preventable disease, variations in height are largely the result of inherited factors. In poorer parts of the world, where food and

doctors are scarce, a greater proportion of the variation will be due to environmental causes. This simple example makes nonsense of the idea of fixed characteristics — 80 per cent heredity, 20 per cent environment — as a blanket statement. It also allows us to develop three ideas important for education.

First, the notion of heritability of characteristics. The proportion of the variation of a trait in a population assignable to genetic causes is called the heritability of the character. Heritability says nothing about the inheritance of a trait between particular parents and their offspring but refers only to the population. Estimates of the heritability of height or intelligence are rated only for the population from which they have been obtained. They are not valid for future populations or for such new environments as could be produced, for example, by new school or housing policies. The technical measure of heritability is a number between zero and 1·0 which states how much of the variation of a trait is due to genetic variation. To take a specific case, a value of 0·5 is calculated to be the inherited contribution to variation in IQ over much of the population of America and Western Europe at the present time and for the last fifty years. This value is based on evidence drawn almost entirely from whites and thus it can be said that about half or more of the variation in IQ in whites is due to the genes. It is impossible to use these proportions for other countries or people except to say that the IQ of Chinese or West Indians, for example, might be more, less, or equally genetically determined as that implied by a heritability of 0·5.

Group differences, especially in IQ, can be very disturbing in their implications for different ethnic and social groups. We are in a sensitive area when the criterion is concerned with brain power because most people care about their ability. But a comparison of groups, say in IQ, brings out average differences and their magnitude. As a result, specific questions can be asked about such differences and, at the wish of society, programmes can be devised that concentrate on and compensate for group handicap. In attacking social problems, the quite necessary concentration on average differences should not divert attention from the individual and the need to treat individuals differently provided that each person is treated as well as possible. The individual in terms of his actual performance is the proper unit of our concern. It is he who must learn.

Second, the more uniform the environment the greater will be the importance of genetic variation. In other words, the more uniform the educational system the more sharply the genetic differences in intelligence will be revealed between individuals. The ordinary person will be cleverer if the environment for the majority is improved but intelligence running in families will be more apparent. Clearly 'uniformity' of environment is a somewhat theoretical notion since each school, whatever its character, is bound to be unique because of the individuals who teach in it;

but insufficiently differentiated syllabuses and teaching methods which aim at the middle of the class are common tendencies in this direction.

Third, the more diverse the opportunities created by tailoring environments to the needs of individuals, the more the level of achievement and success of the population will be raised, for this policy optimizes the environment for everybody. In this situation, no environment would be 'better' than any other (other than a starvation diet or other obvious deficiency); each and every individual because of his different (not 'better') hereditary make-up would require a different environment if he was to develop the highest IQ within his capability. This is a goal to aim for in the future because it is complex, but it is one worth striving for; a child's personality, pattern of ability, and general physical make-up need to be taken into account. Circular 2/75* gave a lead for the development of profiles for handicapped children; suggestions made in that Circular might be applied to every child. Certain specialized disabilities (short-sight for example), when rectified can transform a child into a normal scholar. Many primary (especially infant) schools do try to create a unique environment for each child and have done so for many years. A few secondary schools are moving wholly towards this goal. Most attempt after the first year or two to give educational justice to children in other ways by banding or setting groups of roughly similar abilities. But different treatment for all, as far as the system allows, is just treatment for all; equal treatment is not.

Intelligence

From what has been said about heritability, it is likely that about half of the IQ differences between the individuals that make up a population is accounted for by genes, and the rest by environmental influences. The actual proportion does not matter, what is important is the undoubted relevance of genetic variation in the brain to human success or failure. This is not to say that education cannot enhance mental qualities. One of the basic functions of a school is to spot and develop inborn potential so that a child finds success in something and later a chosen niche in life. But no matter how good we become at creating special environments to match the potentiality of individuals, it is impossible to make a nuclear physicist out of a child with a low IQ although all good teachers know that success needs to be found for that particular child and, indeed, for every child.

IQ stability

From the age of about 7 or 8, IQ does not change much and after the age of 10 it is almost stable until senescence. Stability

* *The Discovery of Children Requiring Special Education and the Assessment of their Needs* (Welsh Office 21/75).

does not, however, imply rigid fixity. In some 10 per cent of children, changes of thirty IQ points over the junior and later school years are found. In the majority of children, changes of from one to ten IQ points are commonplace. These small changes do not reflect real changes in intellectual capacities. Aggressive, independent and competitive children, children from homes where there are books and intelligent conversation are more likely to show upward movements in IQ than others, and boys gain on average more than girls. For practical purposes we should be sceptical about ascribing too high a reliability to a single IQ test in early childhood. However IQ test results, like the results of medical examinations, date and need a periodic review to establish whether significant changes have taken place which, like medical inspections, need subsequent action.

A few points on testing procedures may be worth making. First, that intelligence as measured by tests is only a relative quality dependent very much on the place, time, and culture as we have emphasized earlier. We can say nothing about an individual's measured IQ except in relation to that of other individuals in a population. Second, 'intelligence' cannot be isolated from other facets of human behaviour. Intelligent 'activity', the ability to grasp the essentials of a situation, and respond appropriately to them, is affected by mood, attitude, temperament, character, or aspiration. Put simply, thinking and feeling cannot be separated; low expectation of teachers and parents, for example, can breed low standards of attainment. Third, IQ is defined rather narrowly on the quality measured by the highly fallible instrument of intelligence tests. We all know pretty well what we mean by intelligence. Most would agree with Cyril Burt's definition. He called it 'innate, general, cognitive ability': innate because it has a large inherited component; general, because it enters into every form of mental ability; and cognitive because it is an intellectual quality — that is, it involves knowing rather than feeling. However, there are some obvious weaknesses in the restricted definition. People have fingerprint individuality and if we are to allow individuals to develop optimally, differences should be recognized and encouraged in educational vocational procedures.

A moderate general mental ability is necessary in order to proceed in most subjects and skills (and it is the duty of schools to lay basic, general foundations to meet the needs of society), nevertheless special strengths which start to emerge at 9 or 10 need to be built on. There have been gifted musicians and painters who had an IQ of 90. Moreover there is no doubt that an original and creative child who, as the Plowden Report said, can produce a thought which could not have come from his teacher, sometimes has a modest IQ (115–20) but possesses a high degree of persistence and is able to channel his abilities in obsessive and single-minded ways, in mathematics, or running, or collecting beetles. The opinion of a careful, observant teacher about a child's abilities is

often therefore more reliable than a single IQ test, and is clearly important as a reinforcement or counterpoise to it.

Fourth, a child's personality may have a considerable effect on how he learns and how 'intelligent' he appears. Apparently extroverted children do better when rules are given after practice but introverted children do better when rules are given before practice. Extroverted children appear to prefer instruction by the teacher to instruction by machine and do better this way, while introverted children are the opposite. 'Discovery' methods applied thoughtlessly to all children may, according to this evidence, put some of them at a grave disadvantage. Equal treatment for all is not fair treatment for all.

The gene outfit and intelligence

Finally, how do we know that the genetic outfit of an individual is important in determining intelligence? First, there is nearly as much inequality in ability, scholastic performance, and earning power of the jobs gained among children reared in the same family environment as there is in the general population; this is largely the result of the inequality in the gene outfits of family members. These inequalities are recreated afresh in each generation, a fact which can be predicted from our knowledge of the shuffling of the gene outfits in a random way during reproduction. Second, that exceptionally a genius or very gifted child, is born to unexceptional parents (or vice versa). This is because an arrangement of genes has been inherited, which on the basis of the chance mixing of parental genes, is extremely improbable. Genius is a chancy quality because the children or brothers or sisters of geniuses are not always exceptional themselves. The star quality usually loses its brightness in the children of geniuses because when the genius reproduces his unique gene outfit is dismantled in reproduction and new ones are built up with the mother's (or father's) genes. It is unlikely that the precise gene arrangements of a particular genius quality will turn up again (or if they do may fail to meet an exceptional environment). Perhaps some such gifts fall on stony ground because of the lack of the stimulus of a gifted person. Some schoolteachers have provided just that 'gifted' environment for a child: Emlyn Williams, Lloyd George and Sir Ernest Barker, for example, were all encouraged by their teachers. Similarly with leadership qualities: some men are born to command, others to obey. But the circumstances have to arise to reveal the potential; sometimes an unexpected boy or girl takes the lead at difficult moments on field trips or outdoor pursuits.

Third, and perhaps the most important hard line for the theory that mental capacity has a large inherited component is that new facts can be predicted from the genetical theory. In other words, the genetical theory of inheritance can be used to say that such and such might be the result, by forecasting the results of observations or experiment; the theory does not merely account for the

facts of inheritance but anticipates the unknown. Thus the differences between the IQs of one-egg and two-egg twins can be predicted by the genetical theory of inheritance, since two-egg twins, like brothers and sisters, have only half their genes in common on average, while one-egg twins have identical gene outfits.

A 'special environment'

Where does all this get us? First, the uniqueness of the individual from the moment of conception is the product of an interaction between heredity and environment. Each of us inherits a genetic outfit (a genotype) that endows us with certain potentialities which may or may not be fulfilled as we grow up, but the genotype sets a limit to what each of us can in the best circumstances achieve. IQ scores are a useful but rough pointer to potential ability but they should not be treated as infallible predictors. It is therefore just to treat different people differently so long as each is treated as well as possible. The biological evidence suggests that we need the most flexible educational system that we can manage to be able to maximize abilities. We do our best to achieve this by applying an old cardinal principle of education: to give each pupil individual attention, that is a 'special environment'. This is an ideal aim. But because there are as many human natures as there are men, and time is precious, compromise is necessary between individual attention in a class, and banding and setting children of roughly similar abilities. Most schools adopt a middle course and balance the needs of the individual and the group within the teaching resources at their disposal. They also ensure that resentfulness at special treatment for a particular group is avoided.

Second, education cannot be divorced from the demands of society, which requires critical and creative individuals and individuals who have vocational skills in frequencies proportional to the needs of the existing social system. The aims of education are a compromise between trying to do the best for the individual so that he can find his niche in life, and preparation for meeting the needs of society.

This article began with a quotation from a famous report. It may be fitting to end it with a quotation from an outstanding individual, Sir Cyril Burt. The paragraphs quoted provide a sound philosophy and, in the writer's view, an effective course of action:

> 'This, it has been said, should be the golden age of the common man. It is our duty first and foremost to do the best for the vast mass of the population who, after all, consist of just ordinary mortals of just average ability. Our next obligation is to provide extra help and extra care for the subnormal and the handicapped. Nevertheless, in the interest not only of national survival but of the progress of the race as a whole, there is no escaping the obvious conclusion that in the long run it is the highly intelligent few who can confer the greatest benefits on the less intelligent many — including it may be, in a time of crisis, the gift of life itself . . .

In spite of popular prejudice there is, or there should be, no insuperable conflict between equality as a principle of justice and inequality as a fact of genetics. In education, equal opportunity means equal opportunity to make the most of differences that are innate. The ideal is a free and fair chance for each individual, not to rise to the same rank in life as everyone else, but to develop the peculiar gifts and virtues with which he is endowed — high ability if he possesses it; if not, whatever qualities of body, mind and character are latent within him. In this way, and this way alone, can we be sure of realizing to the full our untapped resources of talent, and warding off the decline and fall that has in the end overtaken each of the great civilizations of the past'.

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Trends 1976|2

School governors in Sheffield

BILL BACON

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The information on which this article is based has formed part of the evidence given to the Taylor Committee on the government and management of schools.

The tide of educational reform is currently running strongly in favour of creating individual managing or governing bodies and making them representative of the various interest and consumer groups concerned with each school. In spite of these developments, however, surprisingly little is known about the work, or the sort of people, at present serving on these newly democratized institutions. I decided therefore to examine the role of managers and governors within the Sheffield school system, which I chose, partly for my own convenience, and partly because this authority had pioneered individual and broadly based managing or governing bodies for its primary and its secondary schools. For the last six years, it has encouraged representatives of all interest and consumer groups, including teachers, auxiliary staff, trade unionists, and members of neighbourhood or community-based associations to take an active part in school board affairs.

The new board members

Sheffield's new board members came from many backgrounds and brought to their schools a wide variety of experiences gained in bringing up their own families, in local political activity, industrial work, business, and the welfare services. However, in spite of all these differences, most people had developed a friendly series of relationships with their fellow members and the work of the new boards was typically characterized by a spirit of harmonious and friendly cooperation. This was helped partly by a tacit agreement to 'keep party politics out' of school board affairs and partly by a common allegiance to what might be best described as a diffused 'ethic of community service'. The new members had in general no preconceived or specific programme of ideas about how the city's schools ought to be run, or how the teachers should do their job; rather they shared a general interest in education, a willingness to help their local school, and a concern for the future well-being of its children.

Links with the community

Many Sheffield managers and governors also shared strong common local interests. Indeed, one reason why there was so little difficulty in finding sufficient people to fill the 3,000 or so places created by this experiment in participatory democracy was that many people were already involved in voluntary community work. Thus, from one point of view, the new Sheffield system provided both an excellent means of acknowledging the existence of these workers and also of awarding them a formal position within the framework of the local educational system. In short, the leaders of local community groups were no longer faced with centralized and paternalistic structures which effectively discouraged any significant level of involvement in their school's affairs; rather they were now able to participate in the management of their own local school and in this way make its policies more responsive to local needs and interests.

Range of activities

Most people took the ideal of 'service' to their school extremely seriously and did not, as has often been reported in those authorities where school board places are a key element in the local political patronage system, simply collect these offices in order to build up an easily quantifiable index of their status in local society. Nonetheless, the new managers or governors did not necessarily confine their activities to one board, and in many ways it was undesirable that they should, for there are many advantages in people being aware of the different merits and weaknesses of a number of schools. The new Sheffield system was so structured that it made local cross-representation between neighbouring school boards fairly easy and ensured that the individual policies of the schools were related to each other in a coordinated manner and made the most effective use of the community's resources.

Turnover and experience

Although each new board was developing its own characteristic method of work, both in relation to the school it served and also to the neighbouring community, they successfully managed to avoid developing into narrow, self-perpetuating oligarchies. Rather there was a slow but steady turnover of members so that the boards were constantly replenished with new skills and experiences. Thus, while roughly half of the Sheffield board members had served for four years or more, 10 per cent were newcomers to this work and the remainder had served for one to three years. However, in spite of the dynamic injected by the presence of so many 'short service' members (mainly parents, teachers, and professional people), the boards also maintained an ongoing coherence since many people with firmer roots in the community tended to remain as balancing 'long service' managers or governors.

Formal and informal duties

Most people were extremely diligent in carrying out their new duties and did not simply confine their attention to formal business meetings. They attended the public events in their school's calendar and also tried to visit it during the course of its normal daily work. Most managers and governors also made serious efforts to inform people in their occupational, interest, or neighbourhood group about the work and difficulties of their school. However, it was not always easy to assess the effectiveness of this advocacy work since so much of it inevitably took place in informal, face-to-face groups, chance meetings, or private discussions at the local pub, school gate, or launderette.

Major difficulties

Although as a result of these reforms more people are involved in, and aware of, the difficulties facing their local school, this has not been an even development. In some areas of the city local people are more responsive to this type of initiative than in others; in small neighbourhood primary schools the problems of communication are easier than in large comprehensives, and managers and governors on some boards are both more conscious of the need for, and skilled in, communicating with local society than on others.

Obviously the success of the new Sheffield school board system is ultimately dependent upon the efforts made by managers and governors to understand the general principles upon which the day-to-day work of their school is based. Unless they appreciate these wider issues, they are unlikely to be effective agents for communicating local educational policies to a wider public, or making helpful and constructive contributions towards their further development.

In spite of their general concern for their local school and the future well-being of its children, many people remained diffident

about discussing these general policy-related issues, and most of their business meetings typically concentrated on such concrete matters as school lettings, teacher appointments, accommodation, catchment areas, and fund-raising.

There were probably two main reasons for this reluctance to look at wider issues. In the first place, teachers were commonly seen as highly trained professional people with a complex set of tasks to perform. Lay board-members tended to see themselves as helpers while also representing local concerns and interests. They were generally reluctant to depart from this position in case they crossed over the very fine dividing line separating what they saw as their legitimate public duties from the professional interests and concerns of their teachers. In the second place, this reluctance was reinforced by the very ill-defined, although extensive, formal powers enjoyed by school boards which are inscribed in their articles and instruments of government or management. These tended to facilitate a latent conflict between three quite different interests and types of authority. Thus some headteachers were worried in case the new boards might use their powers to interfere with the curriculum or internal school affairs; some politicians were concerned that school boards might develop a more positive role and subvent local educational policy; and community representatives felt embarrassed because these key people, reluctant to discuss general issues with them, seemed anxious to divert them into what was often seen as a marginal and fund-raising role.

Most boards were adopting a cautious approach to these problems and were working out an ongoing relationship in which a series of delicate negotiations were taking place between all parties concerned. The key issues to be decided were which powers might be appropriately delegated to school boards by the education committee, which powers would be best left in the hands of headteachers, and what matters might be best discussed and settled by lay boards. Certainly most managers and governors were diffident about invading the territory of the 'professionals'. They also believed that school boards ought to discuss the 'educational aims and objectives' being pursued by their schools. They did not necessarily see their new role in terms of an antiquated nineteenth-century tradition, and in general they also thought it undesirable that a board should seek to impose its views upon a headteacher. They considered that the board's task was to convey the views of the community on key issues, offer helpful advice, and gently persuade.

In short, most Sheffield boards were composed of diffident, though highly responsible people, who readily understood that their new task within the school system not only required a considerable local knowledge, but also personal tact, and the political skill to deal with such highly controversial and confidential problems as disputed catchment areas, homosexual teachers, absenteeism, streaming, and vandalism. Perhaps because these experi-

ences had led them to this finer appreciation of the local realities of educational politics, most people also took the view that their meetings were best held in private. They wanted to hold frank and free-ranging discussions and did not see their meetings as an opportunity for a type of open community forum in which delicate private matters and key items of local policy might be influenced by popular sentiments, rather than quiet and rational debate.

Useful role

Democratized school boards can play a useful role within the local educational system. They are not simply anachronistic replicas of a Victorian administrative system in which the local bourgeoisie once naturally assumed it was their duty to manage or govern the public's schools. Indeed the modern manager or governor is often reluctant to discuss general educational aims and objectives in case he usurps the very real professional authority of the teacher. In most cases, he sees his role as one which is similar to Bagehot's conception of the duty of the nineteenth-century monarch. He is there to 'advise', 'encourage' and 'warn', not to seek to 'rule', 'manage', or 'govern'.

It is unwise therefore to assume that reformed school boards are simply marginal or ceremonial devices. Rather, largely because of their diffuse but latent powers over a school's curriculum, staffing, letting policies, and buildings, they tend to exercise a subtle but nonetheless considerable influence over the general direction of school affairs. In times of crisis involving a key local issue such as a disputed catchment area, the behaviour of teachers or pupils, or community usage of school buildings, then their responsibilities and influence can be enormous. Their very presence in each school facilitates a subtle interactive process in which the professional teachers, though obviously responsible for curriculum and organizational innovation, must seek to justify their actions to a body of responsible laymen representing a cross-section of the leading notables, if not all the social strata, in the community they serve. In this way, democratized school boards not only help to act as an 'interface' between the school and its community and to negotiate between and conciliate many estranged local interests, they also tend to break down barriers and build up a sense of mutual trust, so that the educational interest slowly becomes more accountable to the wider society. In short, the best managing bodies tend to act as a new form of local advisory or consultative council which not only helps the school to build up its own ethos and protects it from the rigidities of an overtly centralized administrative system, but also provides a forum in which the clients and providers, the served and the serving, the laity and the professionals, can work together in a spirit of mutual trust, and in the long-term interests both of the children and of the wider community.

Statistics 11 to 16

P. HOLMES

Director of the Schools Council project on Statistical Education, University of Sheffield

In her article 'Statistics in schools' (TRENDS 1975/4) Freda Conway outlined her personal view of the teaching of statistics and its place in schools. The Schools Council is conducting a project on statistical education which is examining some of the problems Miss Conway raised: the place of statistics in the curriculum and the relation between statistics and mathematics. This article reviews the progress so far.

The first question that ought to be considered is why statistics should be in the secondary curriculum at all. The reasons for its inclusion in sixth form studies will be different from those given for its inclusion in the curriculum for earlier years. The sixth former is more of a specialist, and to the extent that statistics is an essential part of other disciplines it should be included in his studies. It is also an academic discipline in its own right. This follows the pattern set by the universities where there are specialist courses in statistics, and service courses which are more concerned with the statistical techniques and ideas used in a particular discipline, and are taught to intelligent students by specialists. The comparison, however, is not exact because of the lack of school-teacher specialists and the growth of more general and less academic sixth-form courses. Even here the university pattern cannot and probably should not be transplanted to the school.

Pre-sixth form statistics

The case for pre-sixth form statistics is entirely different, for here our concern is not with specialists but with the general education of all children. Subjects are included for their general educational value and as a foundation for later work to be done by those who remain at school. From this point of view the case for including work on statistics is irresistible. Everyday life is full of examples of statistics to which the citizen has to react: cost-of-living increases; wage claims; the dangerous effects of drugs; opinion polls; football pools and premium bonds; balance of trade figures; advertising claims; the total amount of cod available; the effects of seat belts or breathalyser laws; population trends; and so on. We have a clear responsibility to prepare our pupils for a world where statistics permeates all fields of human interest which involve quantification. The teaching of statistics in the 11–16 age range should have two aims. The first would be to show the relevance of statistics by encouraging an awareness and appreciation of its role in human affairs and by showing the many and various

places in which statistical ideas occur and are useful. The second would be to illustrate the depth of statistical thought by giving an insight into the nature of statistical ideas and the power and limitations of statistical inference.

The present position

A look at the present position of statistics teaching in the secondary school reveals two distinct strands. One is represented by the statistical ideas that occur in subjects other than mathematics; the other is represented by syllabuses in statistics, or in mathematics syllabuses that include some statistics.

Contrary to popular opinion, statistical ideas occur in a large number of the non-mathematical subjects — and they are by no means confined to biology or the social sciences. Geographical syllabuses are notable in their inclusion of statistical ideas with work on population, distribution of temperature and rainfall, the scope of natural resources, water supplies, transport, and the growth of towns. Some religious studies courses use statistical data in the context of discussions on marriage, divorce, work, leisure, crime, money, hunger, poverty, and war. The biological sciences may include, for example, a knowledge of survey methods, the use of capture-recapture, genetics and Menedelian inheritance with applications to stock improvement, the correlation between lung diseases and air pollution and smoking, simple fertilizer trials, and the effectiveness of vaccination. Other O-level subjects include such items as birthrate, population changes in Great Britain, the retail price index, opinion polls, inflation, insurance, business risks, simulation of queues, the recording of imports and exports, crime and punishment, bias in historical evidence, estimated positions in navigation, and the conservation of fish — all of which involve statistical ideas.

The mathematics and statistics strand concentrates on establishing specific elementary statistical techniques and calculations. Typically we have such items as simple probability, the collection and presentation of data, the calculation of mean, median, and mode and some simpler measures of dispersion, and perhaps some simple work on regression and correlation.

At first sight this may seem to go some way towards satisfying our twofold aim. One strand helps children to appreciate the role of statistics in society, the other helps them to appreciate the nature of statistical ideas. In fact this is not the case for several reasons. The subjects other than mathematics do not help children appreciate the role of statistics since not all children take all the other subjects mentioned, so they do not come into contact with all of the ideas mentioned above. Many of the statistical ideas that occur in everyday life do not come into any present academic discipline at this level — quality control, for example — and these will not be covered. In many cases, the use of the statistics is quite naïve and is not integrated into the problems of statistical sampling

and inference. The statistics in mathematics strand does not help children to appreciate the depth of statistical thinking since nothing is attempted that cannot be justified mathematically at the children's level. Thus there is no real attempt to teach any aspect of statistical inference since the mathematics of this is clearly far too hard for any 11–16 year old child; the data and statistics are treated as arithmetic fodder. Many of the questions on probability are only dressed up questions on fractions, and their relationship with probability is tenuous. A question which gives the probability of a peach being bad, asks for the probability of having three peaches bad out of five in a bag, and expects the binomial distribution to be used in finding the answer, is clearly more interested in the arithmetic than the statistics. In such circumstances peaches do not go bad independently — only an examiner could suggest they do.

The future

At present the work in statistics is neither broad enough nor deep enough to equip the 16 year old for future citizenship, or to lay the foundation for the future use of statistics in other academic disciplines, industry, or decision-making in business or government. Any syllabus needs to take into account the two strands involved and is not easy to write. It is not enough to write down a list of the statistical techniques that we expect a 16 year old to know. Statistics is not to be equated with developing and understanding techniques any more than is mathematics. To consider statistics as only a new form of applied mathematics is not the whole truth, and indeed it is misleading. Statistics is the study of data, and data arise in a context, and the context modifies the data. The real problems of obtaining a random sample are different for the quality control of an assembly line, the estimation of the number of weeds in a field, and the estimation of the number of people who do their washing at a launderette, yet the subsequent mathematical analysis may well be the same. Clearly any statistical analysis will involve using mathematics, but the mathematics models reality and is subservient to it.

In the present context of school teaching, statistics crosses the usual subject boundaries and hence raises obvious problems. The mathematics or statistics teacher will know the techniques and the statistical ideas, the other subject teacher will know the context in which the data arise, and the questions that he wants the data to help answer. There is a clear case for some sort of team teaching or at least for cross-fertilization of ideas. The two strands need drawing together. There is no doubt that statistics can and should be taught first as a practical subject involving measurement and experiment. Statistics should be seen in the contexts in which it arises and these should cover a wide view, representative of the breadth of statistical applications. Experiments developing ideas of probability are essential, since probability has to be used in

any theoretical justification and proof of statistical results. Experiments, simulations, and other devices need to be used to help children appreciate the connexion between a correctly drawn sample and the original population, to help them understand intuitively the limitations and power of statistical inference, and to glimpse concepts and ideas which they are unable to justify theoretically.

Schools Council project

The Schools Council project is trying to devise teaching materials of this nature for pupils and teachers, and is investigating the problems that arise in the teaching of statistics at the school level. We should like to hear from anyone who has tried different ways of teaching statistics, anyone who is interested in helping us, or indeed anyone who wants to know more about what we are doing.

Trends 1976/2

Environmental education in secondary schools

W. O. COPLAND

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Environmental education differs from the environmental studies out of which it has grown by its recognition that pupils, particularly at secondary school level, need opportunity and encouragement to weigh up real-life issues. Curriculum development has reflected this conviction and many kinds of games and situation exercises have been produced to provide this experience.

In Dorset, shortly after local government reorganization in April 1974 brought the whole of the urban area of Christchurch, Ferndown, Bournemouth, Poole, Wimborne and Wareham within the administration of Dorset County Council, an opportunity arose to involve secondary schools in a major exercise in public participation initiated by the County Planning Department.

South-East Dorset structure plan and growth study

A structure plan team was established in Bournemouth by Dorset County Council with the ultimate task of submitting to the Secretary of State for the Environment in late 1977 a structure plan which will set out policies to guide the physical, economic, and social development of the area over the next twenty years.

In October 1974, a growth study was undertaken offering three alternative levels of growth: a continuation of the present level of growth so that the population would have increased by 110,000 by the year 2001 to a total of 470,000 (trend); a slowing down of this growth to an increase of only 50,000 which would give a population in 2001 of 410,000 (restriction); an increase of 200,000 in the population to give a total of 560,000 (expansion). Some of the implications in these three projected levels of growth were set out in a leaflet circulated to all households and accompanied by a questionnaire in which each household was invited to state its choices in order of preference. The main body of comment was obtained on a household basis, some 15 per cent of questionnaire cards being completed and returned giving a sample of 21,705. Of these 47·4 per cent were in favour of restriction, 40·8 per cent for trend, and 11·8 per cent for expansion.

Views and comments on schools and colleges

It was agreed, however, that young people in schools and colleges should be separately approached and given every encouragement to comment since many of them would spend their adult life in the structure plan area, and would work, play, and bring up their own children there. 2,800 leaflets and cards were issued to students at Poole and Bournemouth Colleges of Technology; this achieved a little over a 25 per cent response rate. An issue on a more personal basis was made to nineteen secondary schools through the senior advisers for the area. This was arrowed to groups where appropriate courses were taking place which would enable young people to consider the issue in the context of discussion of all the relevant implications. This produced, not unexpectedly, the highest response rate of all, nearly 60 per cent, some 1,763 cards, being returned. Additional comments were made on many of the cards and several teachers submitted reports of the class discussions as further material.

Compared with the household figures quoted above, some 57 per cent of those in educational establishments preferred trend, 27 per cent were in favour of restriction, and 16 per cent wanted expansion.

Class discussions

Many issues arising from the growth study became the subject of debate and it was noticeable how few pupils took the exercise in a light-hearted or facetious way. Sensitivity to the threats of

pollution and the likely effects of population growth in the urban area on the New Forest and Purbeck district, both outside the structure plan area, were marked.

Value of the exercise

This exercise in participation has involved groups of 14–18 year old pupils in thinking seriously about the future of their local environment at a 'strategic' rather than at a 'parochial' level and has shown the extent to which the issues thrown up by a structure plan situation reflect, on a local scale, the national and worldwide issues which are the substance of much secondary environmental education.

A link has been created between planning and education departments and the schools which will enable a continuing flow of information during the period of preparation of the structure plan. Moreover, the exercise has demonstrated to young people that their views are wanted and carry weight. (The County Planning Committee has decided in favour of a trend policy, with an element of restriction in the later half of the period of the plan to conserve the environment about which so much concern was expressed in the Growth Study Consultations.) Educators have realised that the level of environmental awareness and appreciation among our young people is encouraging, whether this is due to formal education, the media, the spirit of the age, or other influences.

The process begun by this exercise in secondary schools and colleges in South East Dorset will, I hope, at least start many more young people thinking about what they want their towns and countryside to be, and will urge them to take steps both now and later to express their wills.

The County Hall
London SE1

Dear Sir,

In her most interesting article 'The young teacher in the secondary school' (TRENDS 1975/4), Miss Margaret Maden analysed clearly the needs of new teachers in comprehensive schools and gave examples from her own school of how these might be met. Fortunately, the kind of concern for teachers in their initial year which she describes has become increasingly common in Inner London schools.

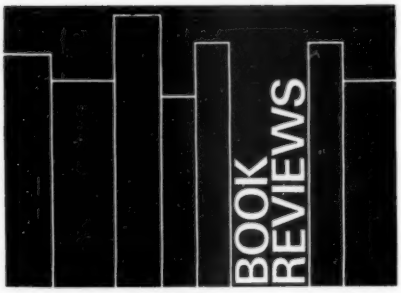
However, the latter part of her article might give your readers a mistaken impression of the Inner London system. All reports on teachers in their probationary year are made by the head of the school and not by the district inspector. The district inspector countersigns the form on which the head's report is made and it is, of course, the district inspector's responsibility to recommend that probation be cleared or extended. In the latter case, the district inspector will have discussed the situation in person with the teacher and the head. The reasons for the extension are put in writing and a copy given to the teacher. There is now no authority probation for experienced teachers. I think Miss Maden must be referring to the practice that existed when she taught in Inner London in the 1960s.

Miss Maden adds: 'However, whatever is written about a new teacher in my school is shown to, and signed by, the teachers concerned'. Your readers might, from the context, suppose this to be unusual. In fact, it is the case in every Inner London Education Authority school and has been so for many years.

There is, in each division of the Inner London Education Authority, an advisory committee for induction and in-service training. This committee of teachers, chaired by the district inspector, makes recommendations for arrangements in its own area so that, among other things, a programme can be devised for welcoming and assisting young teachers. Most of the multi-purpose teachers' centres produce a special booklet for newcomers and the Islington one is a very good example of its kind.

Miss Maden is to be congratulated on the serious attention which she and her colleagues at Islington Green are paying to the induction of new members of the profession, but it would be a pity for the inference to be drawn that this is not the case in most secondary schools in Inner London these days.

T. F. B. JAGGAR
ILEA Staff Inspector for secondary education



The politics of educational reform, 1920-1940
Brian Simon
Lawrence and Wishart £6·00

Advisory Councils and Committees in Education
Maurice Kogan and Tim Packwood
Routledge and Kegan Paul £2·50

Education and democracy
A. E. Dyson and Julian Lovelock (Eds.)
Routledge and Kegan Paul £5·50

These three books, very different in scale and character, demonstrate the significance of educational history and the degree to which it interlocked with politics. Professor Simon's study of the interwar years is closely based on the Private Office papers of the Board of Education and on his mother's papers — Lady Simon of Wythenshaw having been a member of the Manchester Education Committee for over forty years and a radical influence in the Board's Consultative Committee for nearly ten. His secondary sources are extensive, but the most influential seem clearly to have been the writings of R. H. Tawney. Tawney never disguised his limitations, as for instance when Charles Trevelyan in 1931 is struggling with what Simon calls 'demanding sectarians': 'The religious question is off my beat. I have never given it the thought it deserves', wrote Tawney. Unfortunately the religious question wrecked Trevelyan's efforts to raise the school leaving age. From Simon's angle, of course, Tawney has an even more important deficiency, that of leaving 'the decisive class issues aside'.

The period covered by Simon's book, the third in a well-known series, was one of almost continuous Conservative government, and neither the political leaders — nor indeed the political parties — were greatly concerned about educational reform. Progress, if it could be discerned at all, was undeniably slow. Professor Simon is reluctant to attribute this to what others have seen as the profound lack of interest of the community's principal agencies of political influence. Philistines and barbarians were as conspicuous as ever in the period he covers. Detailed evidence is assembled to show how public expenditure on education was continuously blocked. There was a general lack of willingness or of effort to tackle fairly simple problems to which solutions were found without great difficulty in 1944.

In the last ten pages Professor Simon steps outside his period to fire a predictable salvo at the Butler Act, the binary system, and the government of 1970 to 1974. One doubts whether these polemics are worthy of so gifted and industrious a historian. They do, however, bring his work into closer relation with Kogan and Packwood's study of Advisory Councils and Committees because the idea of a conspiracy of the Board's officials to promote 'bad' Advisory Reports (Norwood) and distort 'good' ones (Spens) gets little support in its pages. Changes of attitude that profoundly affected educational development and were disputed by neither party undoubtedly occurred between the Butler and the Thatcher period. This is a short, very readable, very adroitly written account of the series of reports from Hadow to Plowden and of the influence they exerted. It is recommended for the light it throws on educational policy-making.

Education and Democracy is a collection of extracts on the interaction

between nineteenth-century political change and the resultant demand for educational development. An introduction explains the principle on which selection has been based, and each section is prefaced by a commentary on the extracts that follow. Compilations of this type are undoubtedly useful to the average if not to the exceptional student, and this is an enterprising example of its kind.

D. M. HOPKINSON

Applied linguistics and language learning

W. A. Bennett

Hutchinson Educational £5·75

In this, his second book, the author puts forward two main theses. One is that applied linguistics has not concentrated enough on what he says should be the unifying factor: the learner himself. The other, leading on from this, is that the next step forward will be taken when there is an adequate theory of performance; and he proposes a 'model of performance' of his own. These two theses are set into a critical survey of developments in psychology and linguistic sciences, and of aspects of pedagogy and language teaching aids.

There is an uncertainty of focus which makes it difficult to decide for whom the book is written. It is not for beginners, for 'structural linguistics', for example, is not here defined — nor 'the pathological state of compound bilingualism'. Moreover the style is abstract, and the logical relationships between sentences often implicit: the main points could be more clearly made, by using straightforward linking expressions. However, more advanced readers may not need the elements of historical perspective which are included with the analysis.

For a book of this length, the span is ambitiously wide, and with lack of space for exposition, statements made about individual sciences can be open to challenge. For example, the pedagogy appears crude, and fails in fact to concentrate — as his own thesis would have it —on the learner rather than the teacher; the inadequate bibliography in this field is perhaps significant.

The outcome of the thinking on teaching aids — that every learner (irrespective of age?) should have a personal audio-visual mini-lab — is not quite for the world as we know it at present. However, for those whose study of linguistics has been confined to one field, there are some interesting views of discoveries in other fields.

PATRICIA BIGGS

Teaching teaching

E. C. Wragg

David and Charles £3·75

Professor Wragg's book is based upon his belief that a significant part of the preparation of students for the teaching profession should be devoted to detection, analysis, development and application of the skills required in teaching, and that this can be facilitated if the focus is upon the gradual development of competence in specific skills and if at an early stage students can be helped to acquire the technique of self-appraisal.

After an interesting chapter in which he describes some of the extant studies of student-teachers and assesses their implications for teacher training, the author comes to the heart of the book with chapters on interaction analysis, micro-teaching and simulation and role-playing. It will come as no surprise to those who are acquainted with the work of Professor Wragg to learn that his chapter on interaction analysis is particularly helpful; simulation and role-playing, however, could well have been described more fully, perhaps at the expense of the initial historical chapter which, though interesting, is not so essential to the purpose of the book.

While the book is of particular value to those involved full-time in

teacher education, the chapter on teaching practice and work with children, with its advocacy of a planned and progressive approach and its rejection of haphazard 'sink or swim' experience, has many valuable comments about the supervision of students which will be of interest to teachers and heads.

This is a useful description and review of practices and research in this particular field, with extensive references and a select bibliography.

J. WILKINSON

How long is a piece of string?
Research into the evaluation of teaching practice

Society for Research into Higher Education, Pamphlet 4

This slim booklet is a report on a study meeting conducted by a group of teacher trainers who are members of the society for research into higher education. Their general concern is to identify significant areas and effective techniques of research in teacher education. On this occasion they limited their discussion to the assessment of practical teaching skill. The outcome is scarcely encouraging to their major aims but is nevertheless significant at a time when teacher training is going through a period of reappraisal.

The discussion was introduced by contributions from Professor Edgar Stones and Professor Edith Cope and the report of their addresses fills the major part of the booklet; the discussion which followed appears to have been somewhat disjointed as reported here. The remainder of the text is a paper compiled by Mr James Ellis and is largely a list of quotations from reports of researches into the valuation of teaching performance.

Professor Stones' view of research in this area is embodied in the title of his address 'How long is a piece of string?' The assessment of teaching skill is either 'global' or 'analytical'. Global assessments are subjective and therefore dubious; analytical assessments rest on criteria, the objectivity and relevance of which are also questionable. All of this does not carry us very far but he sees a possible way out of the impasse in relating assessment to pupil achievement but points even here to the need to ensure that the observed behaviour of the teacher is really the cause of the pupils' achievement. Obvious, one might think, but a trap into which researchers evidently fall.

Professor Cope in turn warns of the dangers of oversimplification. She is concerned to emphasize the humanity of the teaching context and the personal involvement of everybody present. Objective techniques of research must be supported by procedures to explore the subjective elements: the experience of those so involved. She illustrates the possibilities by reference to a research which she initiated. Interaction analysis was applied not to the teacher in the classroom but in the subsequent interview with the researcher as he sought to explore her experience there.

To seek precision in the evaluation of teaching skills is, perhaps, being over-optimistic. The classroom provides a highly complex human situation which engages the whole personality of the teacher. His professional attributes are extensions of that personality and in their cultivation, formal training plays only a part and one which is difficult to identify within his total performance. That kind of research which derives its approach and techniques from the scientific model is clearly inappropriate when applied to teacher training: it distorts what it seeks to reveal and any results lose significance in the range of possibilities within its field of enquiry. Perhaps the answer lies in an extension of Professor Cope's techniques in the critical awareness and continuing self-evaluation of the teacher's experience with his pupils. And surely these are the marks of a good teacher?

P. PHILLIPS

Micro-teaching: a programme of teaching skills

George Brown

Methuen £3·60

This programme, in three parts, is based on the author's work as an adviser for UNESCO and with students at the New University of Ulster. The first section describes the rationale of the teaching model used — an adaptation of Argyle's social skill model which allows for modifications to be made in the teacher's approach dependent on pupils' reactions to his materials and methods. The model is claimed to be 'simple and robust' which is perhaps why fourteen pages are devoted to this section and only one book recommended for further reading on the subject.

A number of practical exercises contained in seven units are offered in section two. The first units consider lesson planning and concept learning in detail and suggest that teaching has a cyclical pattern which includes the establishment of objectives, the selection of topics and methods, and the assessment of pupils' intended and unintended responses. This allows for modifications to be made and ensures progress in the pupils' learning. Units three and four are designed to offer systematic training in the observation of teaching situations so that students' perceptions of themselves and others on video and audio-tape may be more clearly understood. Several well-developed interaction schedules are explained, and the author's own all-purpose category system (BIAS) is used to record verbal interaction between the teacher and his pupils. The remaining three units examine questioning techniques, exposition, listening and discussion as basic requirements in the teacher's armoury. It is suggested that an understanding of verbal and non-verbal cues can enhance his effectiveness in directing and controlling learning situations by making him more responsive to classroom behaviour.

The final section of the book is devoted to organizational considerations associated with planning a micro-teaching programme.

The programme goes further than most in its intention to include a full range of teaching skills and a detailed analysis of classroom situations; some might say to an irritating extent: 'To arouse pupils' interest in a book, hold it up, point to sections of particular interest, talk animatedly about it, lean forward slightly with eyes opened wide. (Yes! In short, be enthusiastic.)'

Its strength lies in the fusion of classroom-grounded research and the author's experience with his own students, which together, give it an appealing ring of authenticity as a text rooted in the 'real' world of teaching.

P. J. SILVESTER

Early child care in Britain

Mia Kellmer Pringle and Sandhya Naidoo

International Monograph Series on Early Child Care

Gordon and Breach £4·10

As the British volume in an international series on early child care, this book attempts to provide a brief but comprehensive picture of current British belief and practice in the upbringing of children and in the provision of health, social, and educational programmes for them. The professional training for the staff of the various services is described and consideration is given to the problem of disseminating information to parents and others who need it. A brief survey of relevant research is followed by a final chapter which prophesies a great extension of the provision of children's centres.

The authors admit that 'there are few explicitly stated concepts about children or principles of child rearing which would be agreed to by most people in this country'. Yet, nothing daunted and with admirable skill, they are able to state and explain their views on many controversial issues.

Inevitably in so condensed a work, the case is sometimes overstated. Is it, for instance, true that in most sections of society today virtually all parents acknowledge that the task of child rearing is not theirs alone? One might also regret that the statistics quoted are mostly three or four years out of date at the time of publication, and that some injudicious amendment has made nonsense of part of the section on local government.

But these faults, like the understandable preference in citing studies for those conducted by the National Children's Bureau, are minor ones. This volume can be recommended to overseas readers seeking a rapid and broadly reliable impression of this whole field in Britain and will also prove valuable to students in the health, educational, and social services. Those with some prior knowledge of the field are unlikely to read this book from cover to cover, but I for one will now be seeking out its companion volumes on other countries.

J. L. KAY

Handbook of suggestions for teacher tutors

Liverpool Education Committee £1·50

This handbook is a by-product of the pilot teacher induction scheme in Liverpool; it was compiled by a working party made up of teacher tutors and is one example of the many ways in which the pilot schemes have stimulated active thinking by teachers and others about their professionalism and its development.

The teacher tutor is a new feature on the educational scene and during the past three years there have been many attempts throughout the country to define his role. This goal has proved elusive but Liverpool have had better opportunities than others to reach it since nearly 400 teachers there have been engaged in creating the role by acting it out. In some measure the handbook is the outcome of their experience.

It includes sections about the probationer and his likely needs and about the teacher tutor and his relations with his colleagues. Check-lists for action are provided and an indication given of how action is to be related to the stage reached in the teacher's progress through his first year. Selections from the diary of such a teacher compiled throughout the year illustrate the nature of this progress and of the changing needs to which it gives rise. Extracts from the diaries of different kinds of teacher tutor are also included.

This is a commendable effort on the part of the Liverpool teachers. They would be the last to claim that it offers the final word for teacher tutors everywhere. It therefore takes the form of a loose-leafed book which will permit amendments to be made as experience dictates.

The role of the teacher tutor is an evolving one and may well take as many forms as there are schools, but a simple, basic guide for those coming new to the task will be most helpful. One hopes that during the three years of the pilot scheme, this guide will be progressively amended, perhaps concentrating on what is basic and avoiding those parts of the work where a brief and simple treatment may be inappropriate and misleading.

P. PHILLIPS

The rhinoceros in the classroom
R. Murray Schafer
Universal Edition £1·75

Exploring sound — creative musical projects for teachers
June Tillman
Galliard, Stainer and Bell £2·50

Projects in sound
Brian Dennis
Universal Edition £2·00

These volumes give a useful picture of the change of emphasis which has been taking place in music teaching during the last decade. Few people will be unaware of how successful

schools have been in encouraging a (proportionately) small number of talented children to learn musical instruments. Less well observed, and not always understood, has been a move away from traditional classroom practice towards a more expressive and individualized approach through which pupils of all abilities may develop sensitivity and imagination.

R. Murray Schafer is among the most lively and readable of the writers and musicians who have tried 'to place creative music-making at the heart of the curriculum'. What makes Schafer convincing is his willingness to recognize both strengths and weaknesses in such an approach. While criticizing what he rightly calls the 'genius syndrome in music education' he is equally aware of the disappointing tendency 'to substitute for impossibly high standards none at all'; nor will his strictures on the introduction of pop music in the classroom comfort its practitioners. Schafer's own experience has been in North America. This in no way weakens his arguments and the section 'Who should teach music?' could well be studied by those responsible for devising teachers' courses. On the other hand few of us could yet support the argument that while the music of the past should be taught by 'traditionalists', 'present-tense' musical education may demand other talents.

Curiously, both *Exploring Sound* and *Projects in Sound* suggest that the traditionally trained musician may be at a disadvantage in these books. This is a pity. Each appears to have been written by someone well versed in musical matters, and a non-specialist could come to grief fairly quickly. Both books are written for pupils in the middle years (7–14), but Miss Tillman's is more accessible because the language is simpler. *Projects in Sound* is more ambitious and, in some respects, more imaginative — for example, its use of diagram and notation — but the text, of which there is a good deal, is not assisted by either print or layout, and the many unfamiliar references may prove more daunting than helpful.

B. M. LANE

Teaching and understanding drama
Norman Stephenson and
Denis Vincent (Eds.)
NFER £1·75

In context: language and drama in the secondary school
John Seely
Oxford University Press £1·75

It is refreshing to review two books which are not written by drama specialists *per se*. The near-platitude about drama being a service to other subjects is at last proving true, for in both books we have people other than 'pure' drama specialists (or at least people whose professional interests are wider than just drama) writing about drama and treating it as their own.

This is very welcome. However, in *Teaching and Understanding Drama* no new ground is turned over, though, for many drama teachers and others, the book should be of interest if only to confirm what they already believe and/or worry about. It is a collection of rather personal observations and experiences with some helpful improvization transcripts and reports of drama projects (in secondary school social studies and primary school history, for example), written by a group of teachers in universities, colleges of education and a secondary school. The impact of the very good and brief introductory chapter is somewhat diffused, however, and Part II of the book on 'Researching Drama: an American View' is less than useful in terms of the book's own title.

In Context is excellent: it not only concentrates on a particular aspect of drama — improvization — but it also has some very good chapters on other topics, including an intriguing breakdown of some of the key books on educational drama. Nevertheless, at

the outset, we find Mr Seely stating quite clearly what he is about: 'I propose to take a section of what has recently come to be called "educational drama" and relate it to the English teacher's concern with language'. This concern with language and the contribution which both drama and English can make to it is timely as the book may be regarded as a practical extension of the appropriate paragraphs on drama in the Bullock Report. Gratifyingly, for both English teacher and drama teacher, Mr Seely marks out the common ground clearly and in detail.

J. B. PARNABY

Teaching morality and religion
Alan Harris
George Allen and Unwin £2·95
(£1·25 paperback)

Progress and problems in moral education
Monica Taylor (Ed.)
NFER £4·50

Moral judgement from childhood to adolescence
Norman J. Bull
Routledge and Kegan Paul £1·95

In the first book *Teaching Morality and Religion*, the author underlines heavily the familiar point that it is no part of the function of religious or moral education to seek to impose a particular point of view on anyone; both have to do with matters of judgement and understanding and should aim at turning out people who can make up their minds for themselves. No doubt many people, particularly those not versed in the work of John Wilson, to whom the author acknowledges his debt, will find the discussion in that part of the book which deals with the aims, content and practise of moral education useful, especially that concerning the language of morality. There is still a very great need for this kind of definition and distinction. Surprisingly, the author seems not able to recommend a sensible book about the teaching of religious education published since 1966. Much valuable material has appeared in recent years and those sections of this book that deal with religious education do not, in my opinion, add substantially to our knowledge.

Discussion about both moral and religious education will be advanced by the second book *Progress and Problems in Moral Education* which is a collection of varied and interesting papers grouped together under four general headings prefaced by the editor's helpful introduction. The subjects of the papers range from: 'The curriculum in moral education' to 'Pluralist education'. The aim of the book is to establish an inter-disciplinary dialogue between the philosopher and the teacher and a link between theory and practice. The contributors are drawn from both camps and the field of research, so often felt to be a no-man's-land, though John Wilson is right to remind us that there is something of them in all of us. I think the book succeeds — there is much in it to ponder over, not least the section devoted to 'Discipline in school and society', and a good deal worth quoting, particularly from John Hull, Harold Loukes and H. J. Blackham.

Norman J. Bull's book, *Moral Judgement from Childhood to Adolescence*, first published in 1969, is an account of the research that he made into the moral judgement of children. Apart from the absorbing detail of the investigation itself, there is a useful sketch of previous research into the subject. It was in this book that I found the proposition eminently suitable for International Women's Year, the truth of which I had always secretly been convinced of. 'If concern for others is the heart of all morality, as indeed it must be, the female is inherently more truly moral than the male.'

JOHN GOULDING

Prime time
Arthur Gilbert
Evans Brothers Ltd £2·95
Play as exploratory learning
Mary Reilly (Ed.)
Sage Publications £8·00
(£3·50 paperback)

The sub-title of *Prime Time*—'*Young* children learning in the United States' —is a little misleading as it is a personal description of one particular nursery school and of the philosophy of its director who, unusually for this type of school, is a man. His concern for young children is apparent, and accounts of individual children reveal his understanding of them, though it is a pity that ages are rarely indicated. The reiteration of basic principles through an anecdotal style may not be to everyone's taste, but this could be helpful for parents or others new to nursery education. The author condemns report cards and other traditional practices of parental contact stating that he ' . . . gradually evolved a variety of approaches that allowed us to work with parents on an individual basis just as we work with their children . . . ' more details would have been useful.

Play as Exploratory Learning is in two parts. The first, through an account of the work of the social theorists which highlights the problems concerning socialization and the adaptation of man in a rapidly changing society, sees play as a persistent strategy used to apprehend the unknown. In the merging new social structure, leisure, and its underlying dynamic play, is an area requiring reconsideration. Through a review of previous thought about play it is shown that, as a behaviour, it is hidden in a knowledge of single disciplines such as anthropology or psychology, but it needs to have an identity and a strategy of its own. In an explanatory structure for theorizing about play it is conceptualized as a curiosity-based phenomenon that explores outer reality through playful interaction with the environment and in so doing the rules at various stages of development are assimilated. The author/editor concludes that if rules processing is the common denominator of playful behaviour, then man, internalizing the rules of his world, is man constructing his own competency.

Part two is concerned with play and remedial treatment; the theoretical approach is not applied. A play agenda, as an observation and intervention device, aims to describe and order the behavioural chaos of 'deficit' children. An individual child's play history could be an observational and diagnostic tool, while a scale to observe play skills could give a play quotient. Twenty play situations are listed as the basis of a monitoring device of the skills that a child might be expected to master. The final chapter on occupational choice makes a plea for those with handicap to have the means to explore, experiment and discover as play is seen as ' . . . the prelude to competence and adaptation . . . '.

Although much of the book is concerned with play and remedial treatment, and therefore of appeal to researchers and practitioners in this field, frequent references are made to the normal child, and it provides a useful reference for theoretical reinforcement of empirical knowledge about play. Additionally, it may help those working with children to observe them with greater perception.

D. E. WISEMAN

Inglorious Wordsworths: a study of some transcendental experiences in childhood and adolescence
Michael Pafford
Hodder and Stoughton £4·00

One of the consequences of the over-rational education we have fallen heir to is that a very powerful kind of experience is pushed into hiding. Difficult to define, this experience is sometimes transcendental, or near to being so, and in its effects creative for

many young people. It can happen for the first time — and also for the last time — in early childhood. But being more often an adolescent experience it may equally well be sexual or religious in character. To most of us it has no particular name; it is likely to be brief in duration, even instantaneous, and confusedly related to what we know in factual terms. Few people are likely to talk about it, though they may write about it for personal satisfaction and release.

This author has been inspired to enquire into the prevalence of what many would now call 'Wordsworthian' experiences; and he set about it simply by asking a sizeable number of sixth formers and university students a limited number of personal questions. The questionnaire he devised for this purpose offers a long quotation from W. H. Hudson and then, essentially, asks: 'Have you ever felt like this?' Few educational researchers could ever have started out with such unpromising ground to investigate or employed such blunt instruments. Indeed, it is easy to mock the whole project, or doubt at least its usefulness, but Michael Pafford's book is interesting, wide-ranging, tactful, readable, sound in method, and perceptive in psychology at a non-clinical level.

The approach is mainly literary, drawing as it does on the authority of a wide selection of Wordsworth's poetry and prose, and on the 'confessions' of writers up to the present day. Taking his title from Ruskin, Mr Pafford sets out to establish a case for a childhood 'sense of something far more deeply interfused . . . ' and of 'a presence that disturbs' in most of us. Although that something must remain elusive and difficult to define, let alone talk about afterwards, it seems close enough to famous Wordsworthian moments in which joy, fear, ecstasy, and awe reach a trance-like intensity to indicate an important relevance to our educational programmes.

Mr Pafford notes how often music is referred to by his respondents as a stimulus, but chooses not to discuss this in contrast to the extreme rarity of the visual arts. A few students speak of their urge to paint when they are inspired by the countryside or townscape; yet that is not the same thing as being transported by the magic of a Rembrandt self-portrait. No less than fifteen composers are mentioned by thirty-seven respondents, against only Rembrandt of all the artists — and no single architect. Admittedly this may reflect a conditioning of our senses from earliest times, at least in England; but its implications for the arts in education today are considerable, surely. Wordsworth's 'slow sad music of humanity' was complemented by an excitement over the view of famous buildings from Westminster Bridge. Another point deserving more attention is the *suddenness* of the mystical experience, related by many: 'suddenly I was aware . . . '; 'suddenly I wanted to pray . . . '. It is the common reflection of Wordsworth's own '*surprised* by joy', though it may also take the form of momentary terror. But does the word 'suddenly' as employed by so many respondents bear scrutiny? Is it not rather a cliché of narrative writing?

In his own words, what Mr Pafford attempts is the bringing together of 'some accounts of out of the ordinary states of consciousness or psychological events'. That he takes the written testimony of his students on trust may cause scepticism in many readers. But this is a serious analysis of the way people think they have felt at certain crucial moments of their lives. Reservations over the restricted social and intellectual field of enquiry are more likely to be entertained. Sixth formers and university students are highly atypical subjects and likely to be at least verbally in tune with the Hudson passage. Nor is the literariness of the project sufficiently kept in focus; there are blurred outlines and confused

objectives. Even so, the whole is a significant drawing out of potential in the youthful imagination, and most of us ought to know more about what Richard Church described as 'the deepest and most essential secret' of our lives. It is not enough to take Wordsworth seriously; one should take one's own epiphanies seriously, as well as those apparently undergone by large numbers of children in our schools. That is the book's message.

P. C. HAEFFNER

Additional books received

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Published by Her Majesty's Stationery Office and printed in England by Lightbown & Co, 72 Union Street, Ryde, Isle of Wight, PO33 2NB.
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